

2023

Gender Diversity In Aviation: What Is It Like To Be In The Female Minority?

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Casebolt, M. K. (2023). Gender Diversity In Aviation: What Is It Like To Be In The Female Minority?. *Journal of Aviation/Aerospace Education & Research*, 32(1). <https://doi.org/10.15394/jaaer.2023.1943>

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Introduction

Despite a global population that is ever changing and growing more diverse, diversity in aviation reflect minimal gains or changes over time. It is well documented that women represent only a small number in the aviation industry. According to Women in Aviation International (WAI), an organization dedicated to the encouragement and advancement of women in all aviation career fields and interests, only 6% of the total pilot population are women (WAI, 2021). WAI also gives the industry-wide statistics of the number of women involved in other aviation related careers. According to their website, data obtained from the Federal Aviation Administration's (FAA) Aeronautical Center shows only 30% of women were recorded in various other careers in aviation (WAI, 2021). Multiple researchers have dedicated a considerable amount of time seeking to identify the causes for the underrepresentation of women in aviation (Durbin et al., 2020; Marintseva et al., 2022). In an effort to build upon their previous research to further understand and improve underrepresentation of women in the aviation industry, this qualitative phenomenological study sought to bridge the existing gap in literature related to women in aviation by seeking the personal perceptions and experiences of what it is like to be a gender minority (female) in aviation. By conducting personal interviews with 10 women in the aviation industry, this research seeks to bring awareness to women's personal experiences to understand what it is like to be a woman in a male dominated industry in hopes to enhance gender diversity in the aviation industry.

Review of Literature

The initial search for literature concerning personal interviews about experiences and explanations from women in the industry regarding what it is like to be a gender minority in aviation produced a scarcity on the topic. Most of the literature found associated with gender in

aviation focused primarily on female professional pilot numbers, as well as gender stereotypes or gender barriers in aviation. While these are excellent studies of female representation in aviation, the majority of research does not demonstrate personal interviews explaining experiences women may encounter that may be affecting women's overall growth in aviation, with the exception of Kim and Albelo (2021). In expanding the search for related literature to aid in answering the research questions and to emphasize the benefits and recognition of the need for women in aviation, the researcher found it valuable to include the following sections of literature: Minority Status and Underrepresentation of Women in Aviation, Benefits of a Diverse Workforce, and Industry Recognition of Needed Gender Diversity.

Minority Status and Underrepresentation of Women in Aviation

The definition of the term *minority* refers to a part of the population differing from others in some characteristics and often subjected to differential treatment (Merriam-Webster, 2021). The word *minority* can also be described as the smaller in number of two groups constituting a whole, which is applicable to this study.

Women have been a part of aviation since its inception in 1903 beginning with the Wright brother's sister Katherine Wright (Smithsonian National Air and Space Museum, n.d.). Even though women have been involved in aviation since the beginning, multiple researchers suggest that cultural and societal views concerning gender have had lasting intangible strongholds affecting women in the aviation industry (Ison, 2010; Luedtke, 1994; Luedtke & Bowen, 1993; Mills et al., 2016). It could be assumed that because of these intangible strongholds lingering, large gender gaps exist in the aviation industry. For example, women comprise only about 6% of commercial pilots, 26% of air traffic controllers, 18% of flight dispatchers, and less than 9% of aerospace engineers ("Soaring Through Glass Ceilings," 2019).

To illustrate women's presence in aviation, in 2019 Rebecca Lutte published a workforce report about women in aviation to present data on the number of women employed in a variety of aviation occupations. Lutte's results revealed that women are underrepresented in almost all areas of aviation. Specifically, Lutte (2019) found that the largest gaps included technical operations and leadership positions. Her results emphasized the minority status of women in aviation by giving statistical data that only 3% of airline executives are women and only 1% of airline captains are women. Two years later, Lutte (2021) followed up with a workforce report about women in aviation "to update the data and track changes to determine progress made" (p. 5). Lutte (2021) determined through comparison with her 2019 findings "that little progress is being made in significantly increasing the representation of women in aviation" (p. 5). To exemplify the minority status and underrepresentation of women in the aviation industry, it is interesting to look at the number of women employed on average in the U.S. workforce compared to the aviation industry averages. According to the U.S. Bureau of Labor Statistics (2020), women made up 46.8% of the total employed population in 2020. When comparing representation averages, the aviation industry is 16.8% lower than the national average of women employed overall in the U.S. Many researchers have sought answers for decades concerning the underrepresentation of women in aviation. In the 90's and early 2000's researchers (Depperschmidt & Bliss, 2009; Ison, 2010; Karp et al., 2001; Luedtke, 1994; Luedtke & Bowen, 1993) made valuable contributions concerning women in the aviation industry. Most recently researchers (Casebolt & Khojesteh, 2020; Durbin et al., 2020; Kim & Albelo, 2021; Marintseva et al., 2022; Stevenson et al., 2021) have continued research initiatives concerning women in aviation.

Through their extensive research these researchers discovered results including but not limited to:

- Women’s presence, or lack thereof, in collegiate aviation/industry
- Industry and collegiate aviation awareness of women in aviation
- The need for role models and mentors in collegiate aviation and the industry
- Women not seeing aviation as a viable career
- Gender barriers and biases in aviation

However, this study sought to build upon previous literature by conducting personal interviews to truly understand what it is like to be a woman in aviation. The interviews from this research sought to bridge the gap between idea and reality, theory and practice, and potential versus concrete experiences to help ensure a future diverse aviation workforce.

Benefits of a Diverse Workforce

In March 2020 at the Airport Experience Conference in Denver, Colorado the World Director General for Airports Council International (ACI), Angela Gittens, emphasized the importance of gender diversity in aviation and the importance of attracting a competitive workforce. Gittens remarked that because the forecasted demand in air service will double and reach 19.7 billion by 2040, the aviation industry will require a large, diverse, and skilled talent pool from which to draw (Airport Council International, 2020).

In 2005 Michalle Mor Barak’s book, *Managing Diversity: Toward a Globally Inclusive Workplace*, discussed that inclusion is the key to unleashing the potential embedded in a multicultural workforce. Additionally, Florida Tech’s article “Increasing Diversity in Aviation: Why and How” (2020) describes gender diversity benefits in the aviation industry regarding new ideas and perspectives, greater market share, and improvement of bottom line. The article

explains how new ideas and different perspectives are key components of commercially successful airlines. It also articulates that commercial airlines that have diverse leadership teams have a strong defense against stale ideas and that diversity improves innovation as well as market share and overall success.

In October 2020, an organized virtual event for female aviation leaders who represented the airline industry took place to discuss how to increase the number of minority groups throughout the industry. In the virtual event, titled *Aviation Outlook*, participants agreed that workforce diversity is foundational to any sound business model (Cavaliere, 2020). Key takeaways from the virtual event were the many benefits of having a diverse workforce that give airlines an increase in the number of perspectives, backgrounds, and ideas, which ultimately helps the airline because it promotes good customer relations.

Industry Recognition of Needed Gender Diversity

Because the global population is growing more diverse, company culture emphasizing diversity and inclusion is a shared thought for many CEOs worldwide. According to the *18th Annual Global CEO Survey*, diversity and inclusion is at the top of the mind for many global CEO's. It was reported that 77% of respondents have a diversity and inclusion strategy or intend on putting one into place (PWC, 2015).

President and CEO Eric Fanning of Aerospace Industries Association believes, "The aerospace and defense industry is at its best when we have diverse, talented people with different experiences driving innovation and our competitive edge" (Airport Council International, 2020). In 2019, seven key industry stakeholders (Aerospace Industries Association, Airlines for America, Airport Council International, Civil Air Navigation Services Organization, International Air Transport Association, International Aviation Women's Association, Korn

Ferry-Civil Aviation and D&I Practices) partnered together to conduct a global study on gender diversity in the aviation and aerospace industry ("Soaring Through Glass Ceilings," 2019). This study identified important hurdles relative to the state of women in the aviation industry. Women who participated in this study mentioned the severe lack of women in leadership roles in their organization as well as their beliefs that women see a lack of opportunity for advancement within their organization and that their voices are not heard.

The International Air Transport Association (IATA) has also recognized the need for gender diversity in aviation internationally. As a result, IATA launched the 25by2025 campaign which is a global initiative to change the gender balance within the aviation industry. The 25by2025 is a voluntary campaign for IATA member airlines to improve female representation in the industry by 25% or up to a minimum of 25% by 2025 (IATA, 2019). IATA's Director General and CEO Alexdre de Junia emphasized the importance of the initiative by explaining airline passengers come from all walks of life, different cultures, and different genders and the necessity of mirroring that image in the industry (IATA, 2019). In addition to international efforts and recognition of gender diversity, in April 2021, U.S. commercial carrier United Airlines announced its priority to hire a more diverse workforce to include women and people of color (United Airlines, 2021).

Methodology

To understand what it is like to be the minority in the aviation industry this study utilized a qualitative phenomenological research approach. According to Creswell and Poth (2018), qualitative research allows the researcher the opportunity to explore the data and formulate an understanding. This research utilized a phenomenological qualitative research approach to add personal perspectives to the findings through rich descriptions of the lived experiences from

participants (Creswell & Creswell, 2018; Creswell & Poth, 2018; Moustakas, 1994). A qualitative phenomenological approach was the most appropriate because it is important to understand the common and shared experiences of individuals regarding the phenomenon in question (Creswell & Creswell, 2018). This study utilized reflexivity where the author as a woman with a career in aviation with over a decade of experience understands and is aware of her own experiences as a female in aviation but sought the experiences of other women in aviation. This research sought to understand more about what it is like to be a female minority in aviation to help the growth of women in aviation in the future. Qualitative in design, this research utilized a purposeful sample of participants who identified as gender minorities (females) in the aviation industry. Purposive sampling (also known as judgement or selective sampling) is where a researcher relies on his/her own judgement when choosing members of the population to participate in the study. Purposeful sampling involves identifying and selecting individuals or groups of individuals that are especially knowledgeable about or experienced with a phenomenon of interest (Creswell & Plano Clark, 2011). The researcher purposefully chose women from different aviation careers and backgrounds to give their unique experiences of what is it like to be a gender minority in aviation. This research utilized personal interviews to answer the following research questions:

- What are the lived experiences of gender minorities (females) in aviation?
- Do the experiences of gender minorities in aviation contribute to the lower number of women in aviation?

Research Participants and Data Collection Method

Because Creswell and Creswell (2018) suggest a purposeful sampling for qualitative research to answer the research questions, this study sought the perceptions of 10 women with

various careers and backgrounds in aviation who identified themselves as gender minorities in aviation. Upon receipt of approval from the Oklahoma State University Institutional Review Board (IRB-21-252), the researcher individually contacted participants asking for their willingness to participate in this study. Due to the Covid-19 pandemic, the interviews were conducted online using Zoom. Ten individuals were interviewed and recorded with prior consent of each participant. The recordings were subsequently transcribed and all identifying information of the individual and/or employer were redacted. For anonymity, each participant in this study is identified by pseudonyms of Participant A through Participant J. Appendix A shows participant's aviation careers, their corresponding pseudonyms, and total years employed in aviation.

Research Interviews

Semi-structured in-depth interviews were utilized to help understand participants' points of view. According to DeJonckheere and Vaughn (2019), semi-structured in-depth interviews allow the researcher to collect open-ended data, to explore participants' thoughts, feelings, and beliefs about a particular topic and to delve deeply into personal and sometimes sensitive issues.

The interview for this study was composed of three sections. The first section of the interview asked participants' demographic information to identify their gender, current careers in aviation, and the total number of years employed in the aviation industry. The second section of the interview contained 21 questions that focused on explanations of how participants were introduced to the field, any support or barriers they have encountered during their careers in the aviation industry, and their personal experiences in school/training. In the final section of the interview, the researcher asked participants to identify personality traits they think women in aviation must possess to be successful, personal comments about what it is like to be a gender

minority in the aviation industry, and personal suggestions on how to diversify the industry in the future. Appendix B shows the interview questions utilized for this study.

Analysis

This research utilized a reflexive thematic analysis. Reflexive thematic analysis is an easily accessible and theoretically flexible interpretative approach to qualitative data analysis that facilitates the identification and analysis of patterns or themes in a given data set (Braun & Clarke, 2012). In reflexive thematic analysis themes are typically understood to constitute “domain summaries” or “summaries of what participants said in relation to a particular topic or data collection question” (Braun et al., 2019, p. 5) and are likely to be discussed as residing within the data in a positivistic sense. Reflexive thematic analysis is considered a reflection of the researcher’s interpretive analysis of the data conducted at the intersection of (1) the dataset; (2) the theoretical assumptions of the analysis; and (3) the analytical skills/resources of the researcher (Braun & Clarke, 2019). The researcher utilized Braun and Clarke’s (2012, 2014, 2019, 2020) six-phase analytical process to identify, analyze, and report the data for this study. The data analysis for this study was a multi-step process. With prior consent from participants, the researcher recorded the Zoom interviews and took extensive memos during the interviews. After the completion of all interviews, the researcher re-watched the interviews multiple times to familiarize herself with the data. While reviewing interviews the researcher manually coded and compared her handwritten notes to the videos to generate initial codes. After initial codes were developed the researcher generated themes. The researcher then reviewed the potential themes to define and name them for the results sections. After the identification of common themes, the researcher sent the written results to the participants for their review and final approval before presenting them in the results section of this research.

Results

To answer the research questions, information collected from the personal interviews was analyzed, coded, and themes were developed for each section of the interview to describe how the participants explained their experiences in aviation. Table C1 *Open Codes and Themes of Barriers and Supports in Aviation* shows the results from participants.

Barriers and Supports in Aviation

Theme 1: Feelings of Always Being Outnumbered

The most prominent theme that emerged during this study was participants' feelings of always being outnumbered. When the researcher asked participants the interview question "Throughout your entire aviation career would you consider yourself a gender minority?" all women that participated, but one (Participant J) answered very firmly without hesitation "Yes" or "Absolutely!" Participant F verbally illustrated her response by saying "if you go into any control tower, center, or approach, just look around!" Participant B echoed these feelings by describing the pilot lounge for her company. Participant B stated, "my company has around 5,000 pilots and only about 200 of them are women." Participant B continued by explaining her experience of feeling outnumbered by saying "when I go into the pilot lounge before a flight it's usually pretty easy for my Captain to find me because I'm usually one of the only women there." Participant E explained that because she is a female mechanic for a major airline that she always feels outnumbered and believes she is a minority within a minority. Participant E explained that because women already make up such a small percentage of the overall aviation industry that the number of mechanics who are women is even smaller within the industry. When detailing feelings of always being outnumbered one participant said she always feels like "the odd man out." Participants gave specific examples of how intimidating/discouraging it can be to always be

outnumbered by being the only woman in class, flight training, meetings, the cockpit, etc.

Participant I explained her experience that out of 150 flight students at her collegiate flight school only 7 were women (0.04%). Many participants felt that because they were women and were always outnumbered that it was an obstacle that they've had to overcome throughout their entire aviation careers. Multiple participants stated that because they were always outnumbered they felt they had to work twice as hard to "prove" themselves in their aviation careers.

Participant D made remarks about pressure she feels to always prove herself because she is always outnumbered in meetings, airport events, and legislative events concerning her airport.

Participant D believes some women could be discouraged by the fact that women are always outnumbered in aviation, but she feels she personally must "kill it every day at work" to prove herself. Participant E said because she was always outnumbered that it wasn't unusual for her work as a mechanic to be double-checked, which made her feel she must always prove herself.

Participant G described her experience throughout her academic career: she never had a female instructor and only had three female peers during her undergraduate studies. She remarked during her interview, "having no one to relate to in school was a barrier I had to overcome."

Other participants had similar experiences throughout their schooling, training, and careers.

Participant H explained that she is currently only one of four female flight instructors in her squadron of 70 total flight instructors. A consensus among participants' responses was that always being outnumbered sometimes it made it difficult to join in conversation, relate to their peers, or feel a sense of belonging. Participant I described moments while waiting with her male colleagues for flights by saying, "Sometimes I felt like I shouldn't be there because everyone would be visiting and I quietly stood there, because I didn't feel like I could contribute to the conversation." Participant I continued by suggesting that men and women have different interests

often making it difficult for common ground conversations. Participant J was the only participant that did not feel outnumbered in her career in aviation and said, “cabin crews now are pretty close to 50/50.”

Theme 2: Lack of Career Advancement Regardless of Qualifications

In addition to feeling outnumbered, participants remarked that they felt that throughout their careers that it was hard for them to achieve deserved advancement because of their gender. Participant C described a discouraging career experience where she had applied for a position within her company that she felt the most qualified for and deserving of but believes she did not receive it because of her gender. Participant C explained that she had to help the male individual who received the position instead of her. Participant C said, “I basically had to help him do his job that I was more qualified for.” Participant C mentioned in her interview that she would like to see more women in leadership roles within the industry and her company. She noted that it was very discouraging that her company’s flight department lacks women in leadership positions and believes the lack of representation could be viewed as a negative for recruitment of women to her airline and/or the industry. Participant D shared a similar story regarding career advancement. During the interview Participant D told the researcher about applying for her current position the first time. She explained that she was not selected for the position even though she felt extremely confident that she was the best suited and most qualified for the job. When asked to further explain, Participant D said when she inquired about not receiving the job that she was more qualified for and believed she deserved over other applicants, she never received an explanation that indicated a lack of abilities or skills. Participant D explained how discouraging that experience was and believes her gender was the underlying issue. Participant A gave a similar illustration about applying for a previous job as a corporate pilot. Participant A

explained a situation about herself and three other applicants that she knew all applied for the same position. Knowing the other applicants personally, she believed that she was the most qualified because she had more total flight hours; specifically, more flight time in the aircraft and engine type owned by the company she was applying to. Participant A detailed her interview for the position: she explained that because the FBO was at a small airport that everyone knew each other's backgrounds and knew that she had a family and children. She said that during her interview, the interviewer said, "it raises a red flag that you have an infant at home," and then concluded the interview with how children need their mothers at home. Participant A finished by saying it was a very disheartening experience because she believes her ability to raise and mother her children should not be interchangeable with her ability to be a working professional and pilot an aircraft.

Theme 3: Motherhood/Lifestyle Associated with a Career in Aviation

The third theme that emerged during the interviews with participants over barriers and supports during participants' careers in aviation was the experiences of motherhood and the lifestyle associated with a career in aviation. Participants gave instances of the necessary balance women must find in the aviation industry between motherhood, career goals, and the lifestyle associated with aviation.

Although it was not a specific question on the research interview, eight of the ten women interviewed self-identified themselves as mothers. These eight women gave meaningful insights on their overall experiences of motherhood and the lifestyle associated with a career in aviation. Participants C and H, who both identified as current pilots, discussed what it was like to be pregnant as a pilot. Participant C, a U.S. commercial airline Captain who has been in the industry for 36 years and has three children, said during the interview that during her first pregnancy it

was common practice for airlines to make pregnant pilots stop flying at 4.5 months pregnant. Participant C discussed the difficulties female pilots faced because of this practice when she first became a commercial airline pilot, because there was usually no compensation or paid time off. Participant C explained that female pilots who wanted to start families had to consider loss of income and flight hour proficiency. Participant H, a military pilot (military branch redacted), discussed the obstacles that she faced during her flight training during pregnancy. She said that instead of a flight suit that accommodated her changing figure, the (military branch redacted) gave her men's size XL flight suits that did not fit in the legs and were so long that she had to have them altered just to fit her properly. Participant H discussed the effect that pregnancy and maternity leave had on her advancement in her career in the military. Participant H said that pregnancy affected her flight hours and her "gate months" which she explained is a measuring tool used in her military branch to quantify certain number of months flying to advance in her career and rankings. Participant H also told a story during her interview where she believes because she was pregnant that she was moved to an office/administrative position by her superior officer.

Participant F discussed the difficulties she faced when she was pregnant with her two children. Participant F explained that historically because very few controllers are women that when she was pregnant with her children that FMLA or paid maternity leave was not available. Participant F explained that in her experience employed as an air traffic controller, that female air traffic controllers that are expecting mothers had to take unpaid time off, sick days, and/or vacation days after giving birth to care for their newborn child. Participant F said, "after I had my first child, I took 5 weeks off and went back to work working air traffic." Participant F explained that she felt enormous pressure when returning to work on top of being a new first-

time mother and said, “I wasn’t even released to drive a car after childbirth and here I was working air traffic at one of the busiest airports, because I didn’t have an option.” Participant G had a similar response in her interview about the pressure of motherhood and maternity leave. Participant G illustrated a story to the researcher about being pregnant as a newly-hired faculty member at her university. Participant G said she felt like because her colleagues were all men and that she, as a newly hired junior faculty member, did not take her legally eligible FMLA maternity leave because she felt vulnerable if she took leave. Participant G explained that it wasn’t her immediate supervisor’s fault, that she just felt extreme pressure and different because she had no one to relate to in that experience. Participant G finished by saying in hindsight that she shouldn’t have worried about it, but at the time she felt very vulnerable because she was the only woman and had no one to confide in or relate to.

Participant F discussed the obstacles she encountered while working full time as an air traffic controller and breastfeeding/breast pumping at work. Participant F feels that because women are gender minorities in air traffic control and aviation in general that it was uncharted territory for breastfeeding/breast pumping moms in the aviation industry. Participant F said her air traffic control facilities that she was employed at post-partum with both of her children accommodated her the best they could while breast pumping, but most could only provide her the privacy of a storage closet. Participant F continued explaining her experience on the lifestyle associated with a career in aviation. She expressed her feelings that “the life and schedule” of a woman in aviation is not for everyone and it could deter young women from entering the industry. Participant F explained that because the aviation industry never “stops” that the typical schedules for pilots, air traffic controllers, and other women involved in the aviation industry sometimes require sacrifice. Participant F explained specifically that it sometimes requires

“missing holidays, birthdays, kids’ sporting events, family gatherings, etc., to work.” Participant F summarized the associated lifestyle when she said, “it’s not untypical for me and my family to celebrate Christmas on December 28th or another day that isn’t Christmas because I am working.”

Participant A, an air ambulance pilot and mother of three, spoke about the lifestyle associated with having a career in aviation resulting in the lower number of women in aviation. Participant A believes most women find it hard to leave their home and their traditional domestic responsibilities to pursue a career in aviation. Participant A mentioned that the aviation industry is very demanding and it is sometimes hard emotionally when having a family and balancing work-life and home-life. Participant A offered the speculation that female retention in aviation could be affected when women have life changing events like getting married and childbirth and their life focus and priorities may change. Participant B who has worked in many capacities in commercial aviation also discussed the associated lifestyle with a career in aviation. She summarized her feelings saying it’s not for everyone, but says it is something that she loves and what drew her to her career. Participant J described the lifestyle of being a flight attendant by explaining the flexibility required as well as the importance of having understanding relationships regarding her career because she said sometimes it’s literally “flying by the seat of your pants, because the aviation industry never stops or sleeps.” Participant I and Participant E offered similar remarks about the unique hours that the aviation industry requires. Because of the experiences of motherhood and the lifestyle associated with a career in aviation this could be a potential deterrent to young professionals or aspiring young women interested in aviation. While all participants gave instances of the ability to accomplish motherhood and the lifestyle

associated with aviation, they all said it is beneficial to know beforehand the expectations of the industry, the sacrifices involved, and to have the flexibility and willingness to do it.

Theme 4: Gender Barriers and Biases in Aviation and Unconscious Biases

The final response theme that emerged during the interviews was the participants' belief in gender barriers and biases that exist in the aviation industry. The following questions were asked during the interview: "Do you feel gender barriers exist for females in aviation?" and "Do you feel gender bias exists for females in aviation?" Every woman who participated in this study answered affirmative and gave examples of gender barriers and biases in favor and opposition of women in aviation. Participant E gave a description from her professional experience of when her male colleagues would try to give her preferential treatment when performing certain tasks for aircraft maintenance. She gave a specific example that when changing a tire on an aircraft they assumed because she was a woman, she was incapable of lifting. She explained that she appreciated their concern, but that she utilized the equipment provided by the airline and procedurally changed the tire by herself. Participant C gave a unique insight about her experience with gender barriers and biases. When asked if gender barriers and bias exist for females in aviation, Participant C answered "yes" and said, "Let me describe it." Participant C told a story describing the positive and negative experiences she has had with gender barriers and bias during her career. Participant C said when she was first hired for her airline that there was a lot of enthusiasm because the number of women that were hired in the same year for (airline redacted). She described that experience as "being a big deal for that airline at that time because the number of women that were employed as pilots for that airline were in the single digits." Participant C said that while there was a lot of enthusiasm, that she felt pressure to perform. Participant C explained that her sim partner during training was also a woman, which she

explained was unheard of when she was hired. She described that management pilots would come into their simulator during training and just watch them to see if two women could fly together. She continued by saying, “I think it was the first time that they put two women in initial training together. It was like we were an anomaly; they didn’t go into the sim where there was two men.” She said that she hopes that the enthusiasm was positive, but she questioned if they thought, “Could two girls actually fly together, and it be safe?” Participant C described that early in her career as a pilot she would sometimes receive questionable remarks from passengers when they saw her in the cockpit and not just men. She said that has since changed and people are excited when they see a female pilot for their flight.

In addition to positive and negative experiences with gender barriers and bias for women in aviation, participants believed *unconscious* barriers and/or bias exist for women in aviation. An unconscious barrier or bias is a learned stereotype that is sometimes automatic, unintentional, and can be deeply ingrained as beliefs and can have the ability to affect our behaviors. The common unconscious barrier and bias mentioned by all participants was that society considers aviation as a man’s profession. Participant J gave her personal experience where individuals, specifically airline passengers, unconsciously always assume flight attendants to be an all-female gender job and pilots to be an all-male gender job. Many of the participants mentioned that they believe these unconscious biases or “stereotypes” as most women of this study called them, are often a difficulty to women in the aviation industry because they must overcome what society thinks is acceptable first before performing their jobs. Participant A believes gender stereotypes for women can have a major impact on the career trajectory of women in aviation as well as the recruitment and retention of women in aviation. Participants believe these stereotypes affect the industry’s outward reputation. Participant E remarked that she believes the reputation of aviation

is male dominated and that women in this profession are often labeled as bossy and strong-willed. Women of this study explained that because of these stereotypes that it can be challenging for women to navigate societal expectations in their careers in the industry.

Experiences within School, Training, and Career

Since school and training are the traditional starting points for women that enter aviation, the research interviews sought information about participants' experiences during their aviation schooling, training, and careers to understand what it is like to be a gender minority in aviation to explain if their experiences potentially contribute to the lower number of women in aviation.

Two themes emerged that answered the research questions: Theme 1: Women Must Constantly Prove Themselves, and Theme 2: Underrepresentation (see Table C2).

Theme 1: Women Must Constantly Prove Themselves

Women of this study experienced feeling pressure as gender minorities in aviation. As a result, they experienced that they must constantly prove themselves, not make mistakes, and work twice as hard as their male peers/colleagues. Participants A, B, and I described that because of their minority gender status that they feel like they “stick out” and have “higher visibility” making it easier to identify their wrongdoings. Participants D, E, F, G, and I believe that because they generally are the only woman in the room, meeting, cockpit, control tower, maintenance hangar, etc., that they cannot make simple mistakes that the majority gender could. Throughout the interview process, participants A, C, E, H, and I gave examples of derogatory aviation slang about women in aviation such as “empty kitchens” that made them question being there, feel less than, and like they must constantly prove themselves. Participant I told a story during her interview about a runway incident that happened during her career in corporate aviation. She explained that the Chief Pilot of her company went off the runway. Participant I said that

because she was a relatively young female aviator with fewer flight hours, that when the investigators got there, they immediately blamed her and thought the Chief Pilot was just taking the blame for her, when in fact he was the one piloting the aircraft at the time of the incident. Participant I quoted a remark an FAA inspector made about her during her interview saying, “she should be flying a 172, not a jet.” Participant I explained in her interview that she felt like the investigators did this based on her gender and because she “stuck out.” She continued to explain that because of this incident she felt like she could never make even a simple error because she always felt she must prove herself. Participant I mentioned that constantly feeling under pressure or having to always prove yourself can be a discouraging experience for the recruitment and retention rate of women in aviation.

Theme 2: Underrepresentation

The second theme that emerged in the schooling, training, and career portion of the interview was participants’ experiences with the underrepresentation of women during their education, schooling, training, and careers. All participant’s responses were consistent with the low industry statistics of women in aviation. Participant C, who has been employed in the aviation industry the longest, said that throughout her entire 36-year career in aviation she has worked with less than 20 other women. Statistically, that’s less than two women a year in 36 years. Participant D said she has only worked with two women in 21 years in the aviation industry. Many women described situations where being underrepresented sometimes made it difficult to relate to their peers in terms of hobbies and everyday life. Participant A described her experience as a former commercial airline pilot describing her struggles to relate to her colleagues because of underrepresentation. She gave instances of not being able to address feminine problems during flight with a specific story of an everyday human hygiene task of

brushing her hair in the cockpit making a male colleague uncomfortable and him saying something. To illustrate the underrepresentation women of this study encountered throughout their school/training and career, participants were asked “How many females did you have in school, training, and your career?” Table C3 *Underrepresentation of Females* shows their answers. Participant I was the only participant to acknowledge the balance of gender in her profession as a flight attendant but was highly aware of the underrepresentation of women overall in aviation.

Personal Comments

The last three questions of the interview were participant’s personal perceptions of the following:

- “What personality traits do you think women in aviation must possess to be successful?”
- “How would you summarize what it is like to be a gender minority in aviation?”
- “Do you have any suggestions of how to better diversify the aviation industry?”

What Personality Traits Do You Think Women in Aviation Must Possess to be Successful?

When asked the question about successful personality traits, participants gave the following answers: self-confidence, grit, patience, self-motivated, perseverance, tenacious, calculated, ability to multitask, etc. All participants explained to some degree that successful women in aviation must be self-confident, driven, tough individuals, who don’t take things personally. The women of this research believe that these identified personal characteristics have helped them overcome the challenges of being a gender minority in aviation and helped them focus on their careers rather than their gender. Participant A described personality traits for successful women in aviation as “forward thinking, confident, tough, self-aware, and

extroverted.” Participant I described her personal personality traits that she believes have helped make her successful. She described herself as “having grit and the ability to persevere.”

Participant F said she is successful because she is “outspoken, stands her ground, self-motivated, and confident in her abilities.”

How Would You Summarize What It Is Like to be a Gender Minority in Aviation?

All ten women interviewed recognized gender disparity in aviation and how it has affected their experience in the industry. Participants explained that they are gender minorities in every aspect and division of their jobs and industry including but not limited to their peers, colleagues, bosses, co-workers, management, etc. Participant A summarized her experience by explaining that women are minorities from “start to finish in aviation.” She explained that she had less than five female peers during her flight training, as well as no female flight instructors. Participant A hoped that it would change when she got to the industry, but she explained she had no female colleagues at the first regional airline she worked at, currently flies with no other females at her current job and has had no female bosses. Participant E has worked with less than six women throughout her 25-year aviation career. Participant E explained what it is like for her to be a gender minority in aviation by saying “we are women, working in a man’s world.” Participant G summarized what it is like to be a gender minority in aviation by saying she believes women experience a different aviation industry than their male counterparts. Every participant gave an explanation or multiple personal experiences during their interviews of always being outnumbered on more than one occasion during their experience in aviation. Participants believe it is not ideal being the minority, but eventually it is something they have gotten used to over the course of their careers. Some participants gave negative firsthand experiences of biases and barriers they’ve experienced throughout their careers based on their

gender, but not one participant responded that being a woman affected their ability or willingness to do their job. The women interviewed were proud of their careers in aviation because of their minority status. They feel like they are “paving the way” for future generations as Participant G put it. Participant E, an airline mechanic, gave a simple summary of all ten women’s responses concerning what is it like to be a gender minority in aviation when she said it’s “Just part of it.” Most gave very direct answers that in their opinion it didn’t matter their differences whether it be gender or color of skin; they were there to do a job and believed their abilities were more important than their gender. Participant I spoke on her abilities to fly regardless of her gender by stating, “I can fly just as well as anyone else.” Participants demanded the aviation industry do better relating to women and their experiences in aviation to help achieve gender parity for the future of the industry. Participants were very humble with their responses on the negative things that they’ve endured during their careers being the minority. When asked about their negative experiences, many women gave multiple stories of negative lived experiences, but said their experiences were worth it if it inspires or helps more women to enter the aviation industry in the future. Overall, every woman interviewed was very hopeful to see more women involved in aviation in the future and wanted to be a part of the solution.

Do You Have Any Suggestions of How to Better Diversify the Aviation Industry?

Participants offered multiple suggestions when asked how to better diversify the aviation industry. The common answers that emerged from participants were the necessity to educate young girls that a career in aviation is possible, the presence of more female role models and women in leadership positions, and the visibility of highlighting women in aviation. Participant F said, “the industry needs to do a better job at the visibility of women in aviation and highlighting that diversity.” Participant D made similar remarks emphasizing, “it needs to be a group effort to

show the minority population between industry leaders and STEM educators to create excitement for the industry.”

The most common suggestion given by participants was the importance of educating young girls that a career in aviation exists, and that it is something that is achievable for them. Participant D believes that aviation does not get enough exposure among young ladies. Participant A suggested this could be achieved a multitude of ways. Participant A, F, G, and H offered the suggestions of visiting schools for career day, girls in aviation day events, tours of aviation facilities like airports, FBO’s, or commercial headquarters, discovery flights, airline recruiting, attending airshows, etc. A consensus among all the participants was that aviation is not a “traditional” career that is presented to young girls. Participant F said, “it’s really important to show young people you don’t have to get a cookie cutter education or degree.” Participant G believes that early exposure to aviation could help aid in diversifying the aviation industry in the years to come which is why she participates in Girls in Aviation Day annually.

The second common suggestion was the need for female role models and leaders in aviation. As previously mentioned, Participant C said there are no women in management in her flight department for her airline. Participants mentioned how it is human nature to relate or identify with someone who looks like you or has the same life experiences as you. Participant D described the advantages of having a female mentor that helped encourage and inspire her in her career. The women interviewed believe the airline industry needs to do a better job of showing that there are females in aviation. Participant A said, “You rarely even see a woman in the cockpit in a commercial airline ad, let alone in the left seat as Captain.” She continued explaining the critical importance of this representation of diversity is that if a young girl sees a female captain that she knows it is a possibility for her in the future. Not only do the women of this

research believe the industry needs to do a better job of advertising and marketing women's involvement in aviation, but they also believe that more women are needed in leadership roles within the aviation industry and within their specific aviation companies. According to the International Aviation Women's Association (IAWA) less than 3% of airline CEOs are women globally (IAWA, 2021). Participant F believes the FAA and the industry could work together to increase this percentage.

Discussion

The experience of women as minorities is an important point of view that needs to be considered and addressed for the retention and recruitment of women in the aviation industry. With the mass departure of the aviation workforce retiring over the next decades combined with an increase in air travel demand, it will take both men and women to fill all roles within the aviation industry.

Women constantly being outnumbered and underrepresented in aviation could make women question if they even belong in the industry. Social psychologists have studied the human need of belongingness for many years; it has been found that feeling a sense of belonging is an important intrinsic motivator. According to Walton and Cohen (2011), socially stigmatized groups are more susceptible to belonging uncertainty, which occurs when people feel unsure of their abilities to "fit in" (Smith et al., 2013). Low representation of one's group can also influence sense of belonging, particularly for women in male-dominated fields (Murphy et al., 2007). Johnson (2012) references that according to Abraham Maslow's hierarchy of needs, the sense of belonging is a major need that motivates human behavior just like food, shelter, and safety. If women do not feel like they belong it could negatively affect their motivation in the aviation industry. Peer interactions and interpersonal relationships are so important in the sense

of belonging and are often seen as the most critical factor for overall sense of belonging. If women are unable to identify, or feel like they belong with individuals of their same gender during their schooling and training and if the identification does not change when they enter their careers, the recruitment and retention rate of women in aviation could be negatively affected. As a result of negatively impacted recruitment and retention rates, a more proportional balance of gender representation in aviation will not occur and the number of women in aviation will continue to remain low.

Some participants of this study experienced lack of opportunities and career advancements. Their responses could help explain potential reasons why women make up significantly less of the gender population in the aviation industry. During the interviews for this study participants gave specific examples of the lack of opportunities for women in aviation and the scarcity of advancement in their careers. More than one participant discussed firsthand experiences that regardless of being the best qualified, most deserving candidate for a position that they believe they were overlooked because of their gender. Participants stated in interviews that the apparent lack of opportunities and advancement for women in aviation is an industry-wide issue that is very apparent and visible. Participants gave specific instances of the lack of women in important leadership positions within their specific aviation companies and the industry. From the insider's point of view, if women in aviation do not see the potential to advance in their careers or potential career opportunities, what will entice them to stay? From the outsider's point of view, if individuals (particularly women) notice the lack of overall female advancement and lack of females in leadership roles in aviation it could deter them from pursuing aviation as a future career, dramatically affecting the future recruitment of women to aviation. When an individual is looking for a future career to pursue, most seek a career with

potential advancement and opportunities, including but not limited to salary increases, position advancement, leadership roles, etc. If an impressionable young person (particularly a young woman) does not see the visibility of that potential for women in aviation they will pursue other careers where that potential is a reality. Words like visibility, identify, and representation were often used during participants' interviews. These 10 women believe it is crucial to increase the visibility of women in the industry now to increase the number of women in aviation in the future.

Women of this study explained during their interviews that they have experienced gender barriers and bias in favor of and in opposition to women in the aviation industry. The most common response regarding barriers and biases for these women was the experience of dealing with unconscious bias that aviation is only a man's job. Participants believe that this stereotype comes from historical and societal perceptions and that these perceptions hinder women's visibility in the industry and women's growth in the industry. Unconscious biases can potentially have unintended negative consequences that influence industry culture, salaries, and promotions for women. All of these can influence career decisions for women. If a woman sees a portrayal of aviation as only being a man's occupation, it may discourage her from pursuing that career resulting in a homogenous aviation workforce. Many researchers have explained the benefits of a gender diverse workforce. According to Badal (2014), a gender-diverse workforce provides different viewpoints, ideas, and insights that allows better problem solving which leads to better overall business performance. Badal (2014) also explained that a gender-diverse workforce allows the company to serve a diverse customer base. Since aviation is an international, diverse business, it is only fitting to have a diverse workforce. To fix this problem, the first step is to identify and recognize the existence of unconscious biases in the aviation industry for women

and to promote gender diversity. By identifying unconscious biases for women, it will allow the industry to bring awareness to the issue to help the industry change going forward. Addressing and eliminating unconscious biases will remove stereotypes for women in aviation to help promote a gender diverse workforce in the future.

A unique finding to this study different from other studies involving gender in aviation was the experiences participants encountered during pregnancy and motherhood with a career in aviation. Participants gave experiences of pregnancy, maternity leave, breastfeeding, and balancing the tasks of motherhood during their careers in aviation. Many of the participants that self-identified as mothers, particularly the women of this study that were pilots, discussed the obstacles that they faced being employed as pilots and being pregnant. As noted by Participant C, thirty years ago commercial airlines made pregnant pilots quit flying halfway through pregnancy. Thankfully, since then things have changed for pregnant commercial pilots. However, it could be assumed that this policy affected the progress of women entering commercial aviation. If women who desired to have families in the future saw the inability to be fully employed as an airline pilot throughout pregnancy after the time and money invested in flight training, they could potentially have chosen another career resulting in the current lower number of women in the aviation industry. According to this study, women interviewed believe pregnancy and parenthood does not affect their male counterparts in their careers like it does the women that carry the children. Participants of this study discussed their changing figures to accommodate childbearing affecting their flight suits/uniforms, doctor appointments, labor/delivery and recovery, personal postpartum health, and postpartum care of their child that they believe only women experience. Results from this study shows participants also believe the pressures of balancing motherhood and a professional career in aviation contributes to the lower

number of women in aviation. Participant A said in her interview that she believes that sometimes when women become mothers in the aviation industry, they rethink their careers and sometimes choose to take other paths after starting families because of job and schedule demands. For retention and recruitment in the aviation industry, it is important to understand the associated lifestyle with a career in aviation. The schedules and demand of a career in aviation sometimes differs from other careers which could contribute to the lower number of women in aviation.

Recommendations for Future Research

Based on the results and conclusion of this study, the author offers the following recommendations for future research. Since this study identified the experiences of 10 women regarding what it is like to be a gender minority in aviation, a further study is recommended to incorporate the aviation industry's perspective on women's experiences in the industry to find helpful solutions and develop initiatives for a future gender diverse workforce. An additional study is recommended to interview 10 men in similar positions in the aviation industry regarding their perceptions of what it is like for gender minorities in aviation to see if similarities or differences exist in their responses compared to the women interviewed. A final study is recommended to identify the current initiatives that aviation companies are implementing to ensure a future diverse workforce.

Conclusion

The aviation industry is at a critical crossroads due to its aging and retiring workforce. Both men and women will be needed to meet this demand. It is time for leaders, organizations, and stakeholders of the industry to embrace and commit to the challenge of understanding what it is like to be a gender minority in aviation and to make the appropriate industry changes to

ensure a healthy gender-diverse aviation industry. It is time to help women feel less outnumbered, promote career advancement and opportunities for women, eliminate unconscious biases for women, promote women's visibility in aviation, and understand women's work-life/home-life balance. The future and health of the industry depend on it. It is the researcher's hope that the findings from this study can bring awareness of what it is like for women in all aspects of the aviation industry to help bridge the gender representation gap that exists.

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Appendix A

Participants' Information

This appendix consists of the participants' careers in aviation, the number of years they've been employed in aviation, and their corresponding pseudonym used in the study.

Participants' Pseudonyms, Careers, and Years Employed

Participant Pseudonym	Current Aviation Career	Years Employed in Aviation
Participant A	Air Ambulance Pilot	18
Participant B	First Officer	23
Participant C	Commercial Airline Captain	36
Participant D	Airport CEO	21
Participant E	A&P mechanic	25
Participant F	Air Traffic Controller	15
Participant G	Aviation Professor	10
Participant H	Military Pilot	7
Participant I	Corporate Pilot	3
Participant J	Flight Attendant	8

Appendix B

Interview Questions

Interview Questions

Demographics

Gender

I am currently employed as a _____ in the aviation industry.

I have been employed in the aviation industry for ____ years.

Introduction to the Field

1. How and when did you find out about the aviation industry?
2. When did you make this career choice? (adolescence, high school, college, military, work force, other?)
3. What attracted you to the field of aviation?

Support/Barriers

4. Did you have any reservations about entering the field of aviation regarding being a gender minority?
5. In your opinion do you feel that you were ever treated differently than others in your profession based on your gender?
6. Do you feel gender barriers exist for females in aviation?
7. Do you feel gender bias exists for females in aviation?
8. What would you say was the biggest barrier/obstacle, if any, you've faced being a minority in aviation?
9. Throughout your entire aviation career would you consider yourself a gender minority?
10. Throughout your career how many other individuals of the same gender have you worked with?

School/Training/Career

11. During your aviation schooling and/or training were any of your classmates the same gender as you? If yes, how many?
12. Do you feel your gender has ever impacted your relationship with your peers, instructors, and/or supervisors?
13. Do you feel based on your gender you have ever been treated negatively by your peers, colleagues, instructors, and/or supervisors?
14. Have there been any specific times that you have felt not accepted or different based on your gender?
15. Have there been specific times you have felt like an outsider because of your gender?
16. Has there ever been a time you've felt outnumbered because of your gender?
17. What impact do you think your gender has on your career performance?
18. What is your perception as to why the aviation industry has low gender diversity?

Personal Comments

19. What personality traits do you think women in aviation must possess to be successful?
 20. How would you summarize what it is like to be a gender minority in aviation?
 21. Do you have any suggestions of how to better diversify the aviation industry?
-

Appendix C

Appendix C consists of the results from the interview questions concerning barriers and support in aviation, experiences within school, training, and career, and underrepresentation of females in aviation.

Table C1

Open Codes and Themes of Barriers and Support in Aviation

Open Codes	Appearance Across Data Set	Category
Only woman	40	Feelings of Always Being Outnumbered
Representation	29	
Men	25	
Culture	15	
Obstacles	10	
Intimidation	8	
Qualification	22	Lack of Career Advancement/Opportunities Regardless of Qualifications
Experience	20	
Network/Networking	20	
Mentorship/Role Models	18	
Leadership	18	
Children	19	Motherhood/Lifestyle Associated with a Career in Aviation
Family	16	
Lifestyle	15	
Time/Involvement	15	
Schedule	10	
Balance	5	
Experience	36	Gender Barriers and Biases in Aviation
Stereotype(s)	18	
Interaction(s)	15	
Women in Aviation	14	
History	10	
Environment	7	

Table C2*Open Codes and Themes of Experiences within School, Training, and Career*

Open Codes	Appearance Across Data Set	Category
Mistakes	34	Women Must Constantly Prove Themselves
Fairness	22	
Blamed	20	
Outwork	15	
Singled out	22	Underrepresentation
Identity	20	
Alone	20	
Women in Aviation	18	

Table C3*Underrepresentation of Females*

Participant Pseudonym	Current Aviation Career	Number of Other Females Throughout School/Training/Career
Participant A	Air Ambulance Pilot	12
Participant B	First Officer	5
Participant C	Commercial Airline Captain	<20
Participant D	Airport CEO	2
Participant E	A&P Mechanic	<6
Participant F	Air Traffic Controller	6
Participant G	Aviation Professor	5
Participant H	Military Pilot	<10
Participant I	Corporate Pilot	5
Participant J	Flight Attendant	10+