

**“We Can and Will Do It!”
Female perceptions of pilot as a career”**

Gabriella Lancia

University of Toronto

Abstract

The purpose of this study was to better understand the low female enrollment rate in flight training programs across Canada. An examination of the most significant barriers contributing to low female enrollment in pilot training programs will help provide valuable insight to partner flight training units on how they may attract more females in aviation training, in turn, increasing the number of woman working as airline pilots. This study was qualitative, with data being gathered from face-to-face interviews with current female students in aviation, including early leavers ($n = 9$) and commercial airline employers ($n = 4$). Interviews were coded thematically and the following themes emerged from our analysis: Awareness of Aviation, Suitability of Aviation Career and Gender Discrimination. Findings demonstrated that the aviation profession needed to emphasize the importance of providing early education and awareness about aviation to both female and male students.

Introduction

Traditionally, aviation is considered a male-dominated profession. Female pilots are working in one of the most gender incongruent fields of work, making it difficult to enter and be successful in the aviation profession. Of the 130,000 airline pilots worldwide, only 3% are female (Politano & Walton, 2014). Due to retirement and anticipated industry growth, airlines will need to hire about 42,090 pilots over the next decade (McCarthy, Budd, & Ison, 2015; Politano & Walton, 2014). The perception of aviation as a male-dominated career also extends to the education system, as aviation falls under the STEM (science, technology, engineering and mathematics) classification. Lack of awareness of career opportunities in STEM-related careers such as aviation, as well as confidence in academic preparation and achievement in math and science are strong contributors to female students failing to pursue STEM careers.

According to the 2011 Canadian Census, 6% of women were employed in the air transport industry, which is an increase from 1991 (4%). Concurrently, in 2015, 160 pilots employed by Air Canada were women, which were approximately 5.1% of its total pilots (Air Transport Association of Canada, 2016). Therefore, the purpose of this study was to better understand the low female enrollment rate in flight training programs across Canada. The study was framed by the following questions:

- 1) What obstacles do females face when entering the aviation profession?

2) How can the profession be improved to better accommodate the needs of females?

Perspectives were collected from current and former female students in aviation programs, as well as employers, across Canada. Understanding the perspectives of female students who were currently enrolled in aviation, as well as that of their current employers was essential in examining whether there was noted discrimination throughout their education and once they entered the aviation field. Therefore, an examination of the most significant barriers contributing to low female enrollment in pilot training programs will help provide valuable insight to partner flight training units on how they may attract more females in aviation training, in turn, increasing the number of woman working as airline pilots (Koch, Johnson & Marshall, 2013; Watt et al., 2012).

Literature Review

Reasoning for low female enrollment in aviation

Although there has been a great deal of progress in achieving gender parity across science and math-based occupations, female students continue to be less likely to pursue STEM-related careers. Traditionally, only about 19-21 percent of undergraduate STEM majors are women (Ma, 2011). Specific vocations associated with male employees include academia, technical roles, computing, craft working and aviation while administrative, secretarial and library positions are predominately classified as female occupations (Jacobs, Tytherleigh, Webb, & Cooper, 2010; Politano & Walton, 2014).

In aviation, women experience a rite of passage as they transition into the gendered culture of the airline pilot industry. In the United States, *The Federal Aviation Administration* (FAA) annual airman certificate demographics report revealed that women comprise roughly 23%—or a total of 162,284 of the non-pilot certificated airman in the United States. (FAA, 2014; Clark, Newcomer, & Jones, 2014). When looking at pilots specifically, only about 6% of pilots in the United States are women. In Canada, 5.2% of the commercial and airline pilot population was female (Canadian Aviation Maintenance Council, 2010). Part of the reason for the low population of female airline pilots is due to resistance from their male counterparts. 80% of female airline pilots in North America have cited that it was difficult to enter the profession because of male resistance who resented them entering their profession (Germain et al., 2012), as it is extremely difficult to secure training as a commercial pilot from an accredited institution (college or university).

Gendered nature of the aviation profession

Perceptions of piloting as a male-dominated career have been present since the emergence of commercial flying. Prior to the First World War, piloting was primarily a military-based occupation where both men and women participated and contributed to flying and building aircraft. In Canada, strong gender stereotypes resulted in a low ratio of females employed in the aviation industry during and after World War I (McDowell, 2015). In 1924 and 1925, the *International Commission for Air Navigation* (ICAN) banned the employment of women as flight crew, citing their menstrual cycle as being a barrier against the rigors of commercial flight. (Cadogen, 1993). However, by the war's end

piloting was firmly and exclusively associated with danger, bravery and masculinity; thus shaping the perceptions of the commercial flight industry to reflect the image of a male pilot. Eventually, as commercial airlines began to expand, with Dan Air being the first airline to begin recruiting female pilots in 1965 (Mills, 1998). Currently, the numbers of female pilots have increased slightly, but are still quite stagnant. Information collected from the *International Society of Women Airline Pilots* (ISA) showed that 4,000 out of 130,000 worldwide pilots are females, which accounts for only three percent of the global pilot population (Morris, 2015). However, Boeing airlines forecasts that between 2015 and 2034 there will be a demand for 558,000 commercial pilots globally; thus increasing the need to push female enrollment to meet the growing demand for pilots (Boeing, 2015).

Some of the major barriers include: negative perceptions of female pilots, fewer advancement opportunities and a greater deal of professional scrutiny surrounding female pilots (Ashcraft, 2007; McCarthy et al., 2015). Despite the reduction in gender-based harassment towards females as reported in previous studies (Davey & Davidson, 2000), gender stereotypes and prejudice still exist within the flight deck. Politano and Walton (2014) conducted a study surrounding male and female perceptions of themselves and the opposite gender in the flight deck. While females generally perceive males as being on an equal playing field, males have a more negative view of female pilots across the board. Politano and Walton (2014, p. 6) explain “males see female pilots as not being very good at flying a plane and, in fact, as being pretty bad at flying a plane.” This shows the undertones that are still dominant in the industry, which may not be as blatant, but still exist, therefore contributing to the difficulty in females not only entering the industry, but also being promoted to leadership positions.

Females in aviation leadership

Despite it being in the aviation field's best interest to train and promote females into leadership positions, male resistance and lack of leadership development are cited as key factors in the lack of females in aviation leadership positions. Females that do obtain leadership positions (i.e.- captain, flight manager) often seem to suggest that women in aviation (as in other male-dominated professions) have had to adapt to the male culture in order to survive; putting them in a difficult position when it comes to promoting gender equality in their own organization. As a result, women in leadership positions did not always support equal opportunities policies, even though they may have faced similar difficulties throughout their career in aviation (Davey & Davidson, 2000; Neal-Smith, 2016). The increased degree of professional scrutiny surrounding female pilots is not only common when pursuing leadership positions, but is also present upon their entrance into the aviation field and even among passengers flying on their aircraft.

Assumptions that women have trouble managing and flying as they are too emotional or that women will not do whatever it takes to get the job done due to their lack of confidence in the flight deck. Additionally, female pilots report that male captains often expect less of female copilots and were more reluctant to give them necessary corrective feedback (Grant-Woffard et al., 2013; Wilson et al., 2015). However, little data has been found on the perceptions and co-operation between male

and female students studying to become pilots. In turn, we hope that this study adds to the existing body of literature by providing a multi-faceted examination of the potential barriers behind low female enrollment in aviation programs and leadership positions in aviation from aviation students and individuals currently employed by commercial airlines in Canada.

Method

Data Sources

This study falls under the Aviation Research Program funded under the *National Sciences and Engineering Research Council of Canada (NSERC) College and Community Innovation Program-Innovation Enhancement Grant*. For this study, a semi-structured interview procedure was adopted; as the questions and prompts were prepared in advance, but only served as a guide to promote further inquiry among participants. To prepare the questions and prompts, interviews with industry professionals were also conducted to determine the major concerns and challenges for females pursuing aviation. Interview/focus group questions were formulated based on preliminary analyses of the literature surrounding females in aviation. Findings from the preliminary analysis that were incorporated into the interview questions included: 1) Internal and external perceptions of female's career choices (aviation and other STEM-related careers), 2) Lack of female role models in the aviation industry, 3) Gender discrimination (harassment, barriers, negativity) and 4) Confidence in pursuing/succeeding in the aviation industry.

Participants and Recruitment

Researchers interviewed three sample groups through one-on-ones semi structured interviews which were approximately 30-45 minutes in length. These sample groups included: 1) Current female students in the college's aviation program ($n = 7$), 2) Early leavers from aviation programs across Canada ($n = 2$), and 3) Various commercial airline employers across Canada ($n = 4$) for a total of 13 participants. Ethics approval was obtained from the college to recruit participants within the college's aviation and flight services programs to individually interview. Student participants were recruited through email and in-person discussions within the college; requesting participation from female students who were currently, had started to complete or had completed the aviation program at Seneca. Commercial airline employees were sought out through Seneca's professional network for placement in the aviation field and were asked to provide their perspectives of the lack of female employment in the aviation field.

Data Collection and Analysis

This study used a descriptive case study approach to gain a multi-faceted perspective on female enrollment in aviation from post-secondary to the workforce. In Canada, there are 32 programs across the country that students can attend to become certified as a pilot, with 11 of these programs situated in Ontario (Air Transport Association of Canada, 2016).

The interviews were transcribed and analyzed by the first author using inductive thematic analysis. Inductive reasoning is a process of coding the data without trying to fit it into a pre-existing coding framework or the researchers' analytic perspectives. Due to the varied roles of the study participants across the aviation profession, making the research data-driven was essential in ensuring that all individual perspectives were heard. Thus, the data were coded semantically, as the themes were identified based solely on what the participants said in their interviews (Braun & Clarke, 2006). To enhance further comprehension and understanding, the interviews were transcribed by both the primary investigators to further engage and understand the data in a detailed manner. Common themes were extracted from the interviews and contextualized both holistically (regardless of sample group) and individually (based on their sample group).

Results and Discussion

This study is unique, as it is one of the only studies that has provided a multi-faceted perspective of females selecting aviation as a career; following students from post-secondary (early leavers, current students) and into the aviation industry (employers). The main objectives of the study were to identify the obstacles the reasons for low female enrollment in aviation programs across Canada and ultimately, improve the aviation profession so it is more accommodating for females. Data from the interview and focus group transcripts were coded and common themes were extracted across and between each sample group. Major themes extracted from the analysis included: 1) Awareness of Aviation, 2) Suitability of Aviation Career and 3) Gender Discrimination. One sub-theme was also identified within Awareness of Aviation (Increasing Female Presence In Aviation). This section will provide an overview of these themes between and across sample groups to ensure parity among the data.

Awareness of Aviation

When asked how current students gained knowledge about pursuing a career as a pilot, none of them cited the high school as a source and stated that they had to find information about the programs they pursued, as well as opportunities to fly a plane through their own research. One of the current students stated, “I think why women would not go into aviation is because they don’t know much about it.”

In addition to students, employers emphasized the importance of bringing awareness to aviation at an early age. One employer had similar sentiments to the high school students in terms of aviation not being emphasized as a career path, “You go into the guidance counselor’s office and its “Hey go be a lawyer, go be a doctor...I don’t think too many guidance counselors say “Hey, think about being a pilot.” One of the employers also stated, “I think it’s horrible...You gotta take it deeper into the public school system...people think of being a pilot as like...being an astronaut or something, such as a lofty thing and “How did you get there?” Similar to the pursuit of aviation as a potential career for women, students also explained that a lack of awareness or investigation at the post-secondary level regarding female students in the pilot program is the prevailing issue in the lack of understanding regarding female retention, “I think there is a lack of awareness on the issue, like it’s never been talked about at the school, but, yeah, no one has ever addressed it, no one has ever come to the women in the program and said “Have you ever felt like you’ve been treated differently? No one has ever really asked us how we feel about this situation? ... Not that it’s a huge problem.”

In almost every case, the aviation students in our study had an early association with flying, either through a relative or through self-financed pilot training. Students emphasized the need for more awareness surrounding aviation programs at the elementary and high school to increase female enrollment in aviation programs. One of the employers expanded on this by stating that, “Guidance counsellors [at the high school level], don’t typically bring flight forward, or aviation forward, at least with those that I’ve spoken with, or other people in education, that have said “You know we really didn’t know about that.” Thus, increased exposure of both students and school staff to aviation as a potential career option may facilitate a growth in pilots entering the industry and a better understanding of the expectations required to be a pilot. Further, recruitment and enrolment of females for aviation among post-secondary institutions (Scott, 2012); and that aviation, specifically piloting, is primarily considered a male-dominated occupation (McCarthy et al., 2015; Watt et al., 2013). Although this played a small role in deterring females from entering the aviation industry, the primary reason cited by all sample groups was a lack of awareness of aviation as a career.

Increasing Female Presence in Aviation

In our study, there was a strong emphasis on raising awareness about aviation through placing female pilots in the forefront. One of the early leavers emphasized the importance of female role models, as increasing the visibility of female pilots could contribute to an influx of women choosing a career in aviation. A current student shared the sentiment that it was difficult to see females at the end of their careers stating, “While I do see an increase in females in the business... specifically there is an increase in females at the college... it is hard to see them actually at the end of the line establishing their career.” One of the early leavers in our study stated that the problem was not due to the lack of female pilots but rather, the shortage of females in positions of authority, “The only thing that I would say... I think the biggest gap right now that would improve the industry is to get is to have those female pilots in management roles... but pilot management roles right? So whether if it’s the VP or Chief pilot... I think it is important for those chief roles to be female and I don’t think I’ve ever met a female pilot in a management role at an airline.” Thus, the lack of female role models in the aviation industry awareness seems to contribute to the perceived suitability of aviation, specifically being a pilot, as an acceptable career for females.

Suitability of Career

The nature of the aviation profession demands that pilots spend time away from home and, in the past, overseas trips have involved (male) flight crew behaving in ways that they would not at home. Several employers, as well as current students in our study discussed this flexibility, stating that there were airlines in Canada working to accommodate women who were raising a family by offering shorter pairings, as well as the option to work longer pairings with a few days off. Family life was identified as the most prevalent challenge by current students in pursuing a career as a pilot and other aspects of aviation. Even though they acknowledged that the airlines were becoming more flexible and offering workable flight schedules, there was still a great deal of concern in how they would navigate family life and maternity leave. One of the current students stated, “Regarding family life, I know that this was a thing that I was contemplating and deciding how hard it would be and if it would really be the right choice for me... because what really pulled me back from flying was the family life. It would definitely be somewhat of a challenge.” Concurrently, one of the current students in the focus group expressed concern about balancing their family life with their career as a pilot, “It’s huge to choose between career and family because you work so hard to be here and then once you have kids, the schedule is hard. It’s not conducive to having a family at all.”

When interviewing the employers in our study, they expressed the changing landscape of the aviation world; stating that companies were starting to offer more flexible schedules to accommodate individuals who did not want to fly long distances. In our study, one of the employers outlined the typical scheduling options that their employees could choose from, “Most other airlines have multiple day pairings, where you are out for two or three days, five days in some cases and then come back. And we have those pairings as well, two, three, and four day pairings, but the longer pairings, there’s

fewer and fewer of them.” Another employer reflected on his experiences and the flexibility his company offered him when he was a pilot, “My working conditions are very good, I’m getting about half the month off, and then all the sudden I had a kid, and you make those lifestyle choices, right? And I have no regrets whatsoever, and you know, I get bored after flying for a couple of hours, so overseas work doesn’t really appeal to me.” When discussing the qualities that a pilot should embody, there was also very little reference to gender, specifically from the employers. Some of the most important qualities mentioned by the employers in our study included being a team player, organized, open-minded to new experiences and a good personality. Students in the focus group shared these sentiments stating, “Well back to the flying for women, I think it takes a certain personality to be a pilot anyway... you have this kind of type A, very competent, leadership personality, I think you can handle what you get, but it takes, it’s more of a mental game.”

Understanding the requirements of a potential career option for students is important in recruiting individuals to pursue their career of choice. Due to the assumptions surrounding piloting as a career, females may be deterred from considering or entering an aviation program. Some of the most common assumptions were identified as high academic expectations in math and science, lack of time off for maternity leave (females) and the gendered perception that females are not meant to fly airplanes (Davey & Davey, 2000; Neal-Smith, 2016). As a result, females did not consider aviation a suitable career option for their vocational and personal lives. In regards to the perceived academic expectations surrounding becoming a pilot, one of the flight trainers explains: “I know when I was in high school and I wanted to become a better pilot, I guess the prevailing logic was you need to be an absolute genius in math and science and of course that does play a role, but...you don’t need to be Einstein to be a pilot.” Another one of the employers also discussed the dominant perception of a pilot, stating that people mainly see pilots as “male, dashing, chauvinistic, travels a lot and cheats on his wife.” This perception, although not accurate, may discourage females, as they cannot see themselves in that role, due to their gender.

Gender Discrimination

Despite the reduction in gender-based harassment towards females as reported in previous studies (Neal-Smith, 2016; Smart, 2016), gender stereotypes and prejudice still exist within the flight deck. One of the early leavers from a pilot program who currently works as a crew scheduler shared this observation: “So I sit with the dispatch and maintenance... and even in that room... there is not that many females....and when you hear them talk about the women pilots... it’s all about gossip right? Like they know the love life of one and they call her a w***....I mean they would never say that about the men and they’re worse right?”

Fortunately, the current and former students in aviation did not experience any blatant harassment based on their gender in their pilot education. However, the female students in our study still identified situations where undertones of discrimination based on their gender are still present within their program. Specifically, female students identified instances of gender discrimination in referring to

machinery, estimating their strength, uniform requirements and the underlying male dominant culture present in the aviation industry. One of the female students in the pilot program explains, ““But like the thing is, you are invited in, you are not barred, you’re not overtly discriminated against, but you gotta know how to play with the frat boys.” As a result, assumptions are often made by the other students and sometimes, instructors about how much female students can handle, ““Something else that happened to me once with pushing planes...we pushed a whole bunch of them in and came back inside, and [the instructor] said, “Ok, we’re going to have to take a break now to let [the participant] rest.”

Although the prevailing opinion in the pilot program was that females are just as capable as males, it is still assumed that they simply cannot be pilots because piloting is considered a male’s profession. While females in the aviation program emphasized that there were few cases where their gender caused them to be treated differently by their male peers and instructors, there are still instances where it is assumed they are not pilots, “Whenever I mention to people that I am in a flight program, they assume it’s a flight attendant program.” Ironically, there were even cases where other women had a lack of awareness surrounding women becoming pilots, such as in this case described by students in the focus group, “[The taxi driver] was like “what program are you guys in?” and we were like “We’re in aviation” and she was like “Pilots?” and we were like “Yeah” and she was like “Even the women?” “Yes.” And she was like “Aren’t you supposed to be flight attendants?” Students hypothesized that it was a limited amount of exposure through societal images to female pilots that caused these assumptions, “I think that that leads back to a lack of education on the subject. There are still even women out there that don’t understand that a woman can be a pilot.”

Perceptions regarding whether specific careers are better for women based on their gender have been shown to start as early as middle school. Even the crew scheduler stated she placed higher expectations on female pilots stating, “Even my own expectations of a woman pilot are higher than what I place on a man. Which isn’t good... it’s not fair... but as a woman pilot who is 1 of 100 here, I expect a higher level of professionalism. I expect her to be proving a point for the gender.” One of the employers in our study echoed these sentiments, not stating that they had higher expectations for female pilots, but their treatment was still not equivalent to males in the industry, “I think at some airlines women are not as widely accepted in the flight deck as they should be. And we welcome them with open arms... I’m only saying this because I still believe that there is still some inherent biases at some airlines...it’s unfortunate, because that is not the way it should be.”

Although this study showed that there were few cases of blatant gender discrimination against females, the prevailing dominance of males in the aviation industry has influenced the general attitude that individuals have towards female pilots. Despite students in the aviation program stating that they did not feel much of a difference as females in the program, there was still some discrimination present in regards to the physical strength and stereotypical role of females. Despite this, the females in flight school did not let these perceptions stand in the way of pursuing a career as a pilot. They were determined to succeed, as evidenced by this statement by one of the students, “You’re not looked down upon, but you have to be better, be smarter than the guys around you to be respected on the same level. Like you’ve got to go out there in your slim pants and big butt and fly better than them to be respected. Whereas they give each other, I find, a lot of allowances, in everything, but you, you don’t get slack.”

Therefore, it was clear that awareness surrounding aviation as a career for women and open communication regarding issues on the flight deck that both women and men may experience. All sample groups agreed that awareness needed to start in elementary and high school. One of the employers explained that it should go one step further and start changing the expectations that we lay out from when children are young: “We have to teach little girls that are going into grade one, that they can be a pilot. And not just put it into some comic strip, and then give them some pathways on how to get there...lots of our female pilot population, I’d say at least sixty to seventy percent of them, have full on normal families, with kids and everything.”

Female students in our aviation program agreed that there needed to be more awareness made available to them by teachers and guidance counselors. One student even provided an informal targeted approach to parents regarding aviation, “I feel like if my parents or anybody else, family members were exposed to it to they would be more open to ideas of going into aviation, so it’s not just like yourself being exposed to it... I think that if [parents] were exposed to [aviation] too...the amount of people going into aviation would increase.”

Employers provided some initiatives they were providing to increase awareness of aviation as a career, including increased online presence on social networking sites (Twitter, Linked in, You Tube), career days in elementary and high schools, and specialized cadet programs. Specifically, the representative from the airline gave information about a five-year cadet program agreement in December 2015 that includes direct entry as an employee after completing the Bachelor of Aviation Technology program. However, despite the importance of increasing the awareness of aviation to all students, there is still a call for placing those who are employed in the aviation field and are female to be brought to the forefront.

Conclusions and Recommendations

This study provides a framework for instructors, students and employers in aviation to understand what might deter women from entering the industry and some potential strategies to increase female enrollment. The reasoning for undertaking this study was to provide a multi-faceted perspective from high school to post-secondary and finishing at the workforce regarding the prevalence of female pilots. Based on previous research, one would expect to find multiple instances of gender discrimination and lack of confidence in female pilots, with these factors acting as the primary means as to why females chose not to pursue a career as a pilot (Davey & Davey, 2000; German et al., 2012). Even though the dominant perception of pilots is male-dominant and some individuals still perceive the occupation of pilot as male, this study pointed to the lack of awareness surrounding the aviation industry and pilot as an occupation as the primary reason why females choose not to pursue piloting as a career.

One of the major findings was that the specific expectations of a career in aviation are often misinterpreted, due to lack of information. These expectations include the perception that one cannot start a family because they will not be home enough and the idea that pilots are required to work multiple days at a time with few breaks. This study has demonstrated that several airlines are willing to offer flexible hours to accommodate employees including multiple day pairings, shorter flights within province or country and extended maternity/paternity options for families. This misconception further highlights the importance of ensuring that accurate information is provided to students who choose to pursue aviation and understand that there are many options available for individuals who

prefer not to travel internationally and be gone for many days at a time. Additionally, the perception of pilot as a male-dominated occupation was another major finding that participants thought should be addressed very early on. Facilitating partnerships between flight schools and educators is essential in maintaining understanding and changing perceptions of aviation as a male-dominated industry. Ensuring that both male and female representatives from the aviation industry is also important in ensuring that students understand that flying is not an occupation that is reserved for males.

Lastly, career education surrounding aviation needs to start when students enter high school. The Ontario Curriculum website currently has resources available to guide students into specific careers, providing a list of essential skills that student should excel or improve to succeed in their selected profession. Specific skills included estimating numerical values, oral communication and problem solving (Ontario Student Success, 2016). Since none of the students in our study stated hearing about aviation or gaining the resources they needed to pursue to take a trial flight before applying, post-secondary institutions that offer flight training programs need to forge a relationship with high schools to recruit more students to enter the aviation industry.

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About the author

Gabriella Lancia is a PhD student at the University of Toronto: OISE, specializing in teacher mental health and emotional competence. She earned her MEd from Brock University.

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