CAREER ASPRIATIONS OF COLLEGIATE AVIATION STUDENTS

by

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Abstract

Three studies in this dissertation examined the career aspirations of collegiate aviation students: student motivation with respect to career aspirations, military aviation career aspirations, and student perceptions of career pathway programs. Findings from each of these studies are valuable to students pursuing careers in aviation and industry partners seeking to fill pilot positions. Each of these reports highlights the desire of current collegiate aviation students to have a career that supports their values of remaining close and connected to their family and friends. In the first research, aviation graduates report crew base and hourly pay as the most important factors when choosing a regional airline. An analysis of the motivation scales indicated that extrinsic – identified and intrinsic motivation styles were most common of aviation degree students who tend to be highly self-driven towards their career goals. Findings of the second study showed patriotism or a desire to serve their country influences a collegiate student to pursue a career in military aviation. For those students not seeking a career in military aviation, a perception of physical limitation and a lack of career control are contributing factors. Results of the final study showed that students consider career pathway programs to be advantageous in accelerating their career path. The Delta Propel and SkyWest pathway programs are perceived as the most effective programs for career advancement.

Contents

Career Aspirations of Collegiate Aviation Students

The current dissertation addresses a central program of research examining the factors influencing collegiate aviation students in selecting, forming, and realizing their career aspirations. The common aim of this collection of three studies is to gain insight into how collegiate aviation students form and achieve their career goals. These studies have separate yet interrelated purpose statements, research questions, methodologies, and results that are combined into this dissertation.

As a result of an overall shortage of airline pilots (Higgins et al., 2013), the first study addressed how airlines can attract pilots to the aviation career field, and more specifically, to work for their company. Key research questions included: what factors influence a collegiate aviation student's selection of an employer? And, how does a collegiate aviation student's motivation style influence their choice of an employer? Quantitative measures were conducted on data received from 256 collegiate aviation students enrolled in aviation courses at the University of North Dakota. The outcome of this research project entitled, "The Relationship Between Motivation and Job Preferences in Commercial Aviation Graduates", is published in the *International Journal of Aviation, Aeronautics, and Aerospace* (Daku & Stupnisky, 2017).

The second study relates to military aviation professionals. Military aviation faces challenges in attracting and retaining pilots during a time of high demand for career airline pilots (Mattock, Hosek, Asch, & Karam, 2016). Thus, the second study focused on uncovering the factors influencing a collegiate student's decision to pursue (or not pursue) a career in military aviation. Quantitative data was collected via a survey of students enrolled in aviation courses at the University of North Dakota. This research problem and associated research questions are the focus on a manuscript entitled, "Factors Influencing Collegiate Aviation Student's Military

Career Aspirations".

The third study in this program of research examines collegiate aviation student and graduate perceptions of career pathway programs. Given the shortage of airline pilots (Higgins et al., 2013; Bjerke et al., 2016; Lutte, 2018), airlines have started utilizing career pathway programs to attract qualified pilots (Lutte and Mills, 2019). The research problem guiding this study focuses on students' attempts to streamline their pathway from collegiate aviation to their career goals by accelerating their collegiate work and experience building, developing early and lasting connections with pathway programs that secure their career aspirations early, and even finding alternative pathways to accelerate their career progression. The central research question for this study was: what are the factors that drive students to choose a particular pathway program? A combination of quantitative and qualitative measures were conducted on data received from a survey of students enrolled in aviation courses at the University of North Dakota.

Each of the research studies are presented in separate, stand-alone manuscripts. A summary of the overall findings and a discussion of the future implications for this entire program of research are included in the final section of this document.

Study 1

(As Published in the International Journal of Aviation, Aeronautics, and Aerospace)

The Relationship Between Motivation and Job Preferences in Commercial Aviation Graduates

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Abstract

How can a regional airline attract a new hire pilot to work for their company? This question is being asked more frequently now that qualified pilots are scarce. The aviation industry cycles between times of disparity and times of prosperity. In periods of disparity, entry-level pilots seeking work with a company may not have a job offer for years on end, while in times of prosperity, new pilots have the option to choose which airline they would like to work for. Once given the option to choose, it is often difficult to predict how applicants will make their decision on which company to work with. Given the cyclical nature of regional airline pilot hiring, little formal research has been conducted on determining how job applicants choose a particular airline to work for. The present research merges motivational research with pilot hiring research to provide insight into how newly qualified pilots choose their future employer. What follows is a discussion of the relevant motivational and pilot hiring research to present the basis of the present study.

The Relationship Between Motivation and Job Preferences in Commercial Aviation Graduates

Challenges to Airline Pilot Hiring

Currently, the regional airline industry is suffering from a shortage of pilots. This shortage is expected to grow to a 35,000 pilot shortfall by the end of 2035 (Higgins et al., 2013). This has created a very competitive environment for regional airlines to acquire new pilots. In addition to the short supply of qualified pilots, the Federal Aviation Administration (FAA) has increased the minimum requirements for a pilot to be qualified to work as a regional airline pilot (FAA, 2013) as a result of Public Law 111-216 which was passed by Congress on August 1, 2010. A pilot must now possess an Airline Transport Pilot (ATP) certificate to operate as a crewmember of an airliner carrying passengers. An ATP certificate requires a minimum of 1,500 hours of flight experience in comparison to the 250 hours needed for a Commercial Pilot certificate which was the minimum standard before the passing of Public Law 111-216. Despite reductions to the 1,500-hour requirement allowed for pilots who graduate from a military flight program or an accredited aviation degree program, this climate has made it difficult for regional airlines to attract qualified pilot candidates.

Regional airlines are using several means to attract pilot candidates to their company (Airline Pilots Central, 2016). They can offer pay incentives (one-time signing bonuses, reoccurring annual bonuses, or higher hourly pay rates), pathway programs that connect aviation degree-seeking students with a regional or major airline while they are in their sophomore or junior year of school, or favorable working agreements, such as more days off each month, minimum pay guarantees, or better benefit packages. Additionally, internal opportunities within the company can appeal to qualified pilot candidates, such as quick advancement opportunities, favorable crew bases located in areas that are cheap to live, new aircraft, and a positive work

culture. Finally, some regional airlines provide the opportunity for their pilots to 'flow' through the regional airline on to a pilot position with a major airline after reaching a certain tenure with the company. These flow programs are enticing to some pilots as they can achieve their ultimate career goal of being a pilot for a major airline without having to repeat the application and interview process.

Regarding pilot candidates, someone who is seeking a career as an airline pilot will typically follow one of three pathways in order to meet the qualifications: 1) complete a military pilot training program, 2) complete an aviation degree program from an accredited university, or 3) attain their pilot certification from an informal pilot training program outside of the university system. Each of these programs yields slightly different candidates and have different minimum qualifications for becoming a regional airline pilot. The present research focuses on graduates of aviation degree programs, a group that makes up approximately 51% of pilots hired at regional airlines (Bjerke et al., 2016).

Due to the increased demand for regional airline pilots and the small pool of qualified candidates, those pilots who meet the minimum qualifications from all three pathways often have the opportunity to choose their future employer. From the pilot candidate's point of view, this can create a challenge in determining the regional airline that aligns with their career goals. The present research attempted to bring clarity to some of these difficulties by surveying recent graduates from a well-recognized aviation degree program in the United States. Specifically, this research sought to identify what motivated aviation degree-seeking students and recent graduates to complete their degree program, and how those motivations influenced their choice of a regional airline to work for. The impetus behind this research is two-fold: first and foremost, to help pilot candidates make a more informed decision on where to work after they meet minimum

qualifications, and second to inform regional airlines on the motivation styles of aviation degree program graduates and how these motivation styles can be used to attract pilot candidates.

This research is guided by three primary research questions: 1) what motivation style is most common among aviation degree program students and graduates, 2) what is an aviation degree graduate's most common reason for choosing a particular regional airline, and 3) are there significant correlations between the motivation style of an aviation degree graduate and their reason for selecting a particular regional airline.

Theoretical Framework on Motivation

In reviewing the literature relating to student motivation, there is a significant body of research that can be used to help better understand the motivation of degree-seeking aviation students and graduates. Self-Determination Theory (SDT) is a theoretical framework relating to motivation that has yet to be applied in the study of aviation student's and recent graduate's aspirations. In self- determination theory, Ryan and Deci, (2000a) make a distinction between different types of motivation, breaking motivation into three categories: intrinsic motivation, extrinsic motivation (containing four subsets), and amotivation. Ryan and Deci (2000a) proposed a continuum of motivation types along with their applicable loci of causality and regulatory processes. A student who is intrinsically motivation is one who completes an activity entirely for the satisfaction of doing so rather than some external consequence. An amotivated student is on the opposite end of the motivation spectrum and is one who does not value a particular activity. Within the extrinsic motivation construct, there are three categories: external, interjected and identified. The externally motivated student does an activity in order to attain an external reward, whereas the introjected student completes an activity in order to avoid feelings of guilt or anxiety. Finally, the extrinsic-identified motivation type is one in which a student does an

activity because it is something that supports their personal values or desires. The integrated motivation construct is also part of the extrinsic motivation category and shares many similarities with the extrinsic- identified and intrinsic categories, however; integrated students complete an activity more based upon the "instrumental value of completing a task" (Ryan & Deci, 2000b, p. 60). It is important to note that this theory is heavily applied towards student engagement and learning outcomes, but hasn't been directed at measuring current aviation students and graduates of aviation programs motivation.

In attempting to determine why an aviation graduate would choose to work for a particular airline, it is useful to understand how they are motivated. Aviation students could be pursuing an aviation degree for a variety of reasons: a lifelong passion for flying (intrinsic motivation), to attain a high paying position as an airline pilot (extrinsic-external motivation), to travel (extrinsic-introjected motivation), to have the prestige associated with a position as an airline pilot (extrinsic-identified motivation), or they could simply be trying to appease their parents who have found career success in the aviation industry (amotivation). How students are motivated has an impact on the choices they make. It is believed that the theoretical framework of SDT can be applied to determine how aviation students and graduates are motivated. When these motivations are compared with the participants declared reasons for choosing a particular regional, it may be possible to gain insight into the reasoning behind a graduate's choice of regional airline.

Theoretical Framework of Person-Organization Fit

There is no existing literature pertaining specifically to motivation and airline pilot job-seekers, but a considerable amount of empirical research has been conducted in other disciplines. This body of research can be used to guide the research of airline pilot new hires.

Person-organization (PO) fit, the compatibility of an employer with their place of employment (Kristof, 1996), is an important consideration when researching the job application and recruitment process. Job seekers are looking for a workplace that fits with their values or supports their goals. Swider, Zimmerman, and Barrick (2015) found that these assessments begin from the applicant's first contact with the company (through recruitment documentation or websites) and continue through the entire hiring process. Swider et al. (2015, p.888) found that applicants undergo a continuous evaluation of how well an organization fits their values as they continue through the recruitment process.

The PO fit discussion must also include specific research on the millennial generation who is currently entering the job market. Millennials have different career expectations and priorities while "placing more importance on the individualistic aspects of a job" (Ng, Schweitzer, & Lyons, 2010, p. 281). Cho, Park, and Ordonez (2013) found "significant relationship with a millennials value of social media, their attitudes toward different social media policies, and their job- seeking patterns" (p. 798). The present study sought to measure regional airline applicant considerations when trying to determine PO fit at a regional airline.

Method

Procedure and Participants

The participants recruited for this study were students and graduates of an aviation degree program in the United States. Most participants had graduated within the preceding two years while a few participants were current aviation students completing their final semester of the aviation degree program. Survey participation was entirely voluntary. An online survey (administered through Qualtrics) was used to conduct this research. Each participant confirmed their willingness to participate before initiating the survey. The survey was delivered to 256

participants who were given a little over two weeks to complete.

After two weeks, the final pool of participants included 134 (17 female) ranging from 20 to 38 years (M = 25.51; SD = 3.17). The distribution of male to female respondents is indicative of the aviation industry as a whole, which has typically been a male-dominated industry. Regarding the race of participants, 118 were white. This distribution is typical of the aviation program as a whole and is also reflective of the disparity between white and non-white pilots in the airline industry. The total flight hours of participants ranged from 222 to 4,000 (M = 1570.48; SD = 682.25). Participants had far more consistent levels of dual instruction given (amount of flight hours spent providing flight instruction to others) M = 665.78; SD = 272.36 (Table 1). Nineteen of the participants were current students, and the remaining 115 were graduates of an aviation degree program.

Table 1. Results.

Measures	N	Mean (Mode)	SD	Minimum	Maximum	Skewness	Kurtosis	α
Demographic scale								
Age	126	25.51	3.17	20	38	.21	.22	
Total Time	124	1570.48	682.25	222	4000	.56	.32	
Cross Country	127	794.43	214.96	60	3500	1.31	2.12	
Second In Command	116	578.13	550.72	0	2400	.94	.31	
Dual Given	126	665.78	272.36	0	1300	-.40	.29	
Choosing a Regional Scale								
Crew base	121	4.98 (7)	2.03	1	7	-.69	-.78	
Hourly pay	122	4.98 (6)	1.74	1	7	-.88	-.03	
Bonus	121	3.78 (1)	2.05	1	7	.08	-1.19	
Aircraft type	122	3.93 (6)	1.94	1	7	-.02	-1.19	
Upgrade time	123	4.63 (5)	1.74	1	7	-.33	-.59	
Recommendation (friend)	123	4.51 (5)	1.75	1	7	-.56	-.60	
Flow to major	122	3.73 (1)	2.18	1	7	.11	-1.40	
Contract	122	3.73 (1)	1.91	1	7	-.06	-1.16	
Pathway program	122	3.09 (1)	2.21	1	7	.56	-1.18	
Campus visit	121	3.54 (1)	1.99	1	7	.15	-1.20	
Motivation Scales								
Intrinsic	112	4.64	1.61	1	7	-.54	-.89	.92
Extrinsic – External Reg.	112	4.59	1.61	1	7	-.60	-.38	.81
Extrinsic – Introjected	111	4.07	1.63	1	7	-.20	-1.06	.87
Extrinsic – Identified	112	4.91	1.65	1	7	-.89	-.09	.89
Amotivation	110	2.60	2.00	1	7	1.12	-.14	.96

Measures

Current and recent graduate student's reasons for completing an aviation degree were measured using Vallerand et al.'s (1992) Academic Motivation Scale (AMS). This scale contains 20 items measured on a Likert scale (1 = Does not correspond at all; 7 = Corresponds exactly) asking participants to indicate to what extent each item corresponds with one of the reasons they chose to complete an aviation degree. The intrinsic motivation construct was measured with four positively-worded items, for example, *Because I experience pleasure and satisfaction while learning new things*. The external motivation construct was measured with four positively-worded items, for instance, *Because with only a high-school degree I could not attain a high-paying job at an airline*. The identified motivation construct was measured with four positively-worded items, for example, *Because eventually, it will enable me to enter the job market as an airline pilot*. The introjected motivation construct was measured with four positively- worded items, for example, *Because when I succeed in college, I feel important*. The amotivation construct was measured with four negatively-worded items, for example, *I once had good reasons for taking an aviation degree, however not I wonder whether I should have continued*. The integrated regulation construct was not measured by this scale.

Choosing a Regional Scale

In addition to the motivation measures, the survey included a measurement of the reasons a graduate opted to work for a particular regional airline. These 10 items were also measured using the same 7-point Likert scale. This measurement asked, *Using the scale below, indicate to what extent each of the following items corresponds to why you chose (or would choose) the regional airline that you currently work for (or hope to work for)*. The items measured were: crew base, hourly pay, signup bonus, aircraft type, captain upgrade time, the recommendation of

a friend, flow agreement with a major airline, favorable working contract, pathway program from university to regional to major, and a campus visit by the regional airline.

Factor analysis was performed on the scores of these survey items to assess construct validity. The result was a four-factor solution which explained 72% of the variation in the data. Items for crew base and hourly pay loaded onto one factor. A second factor related to bonus pay, flow agreement, and contract, which are fixed factors associated with working for a particular regional airline. A third factor loaded items relating the aircraft type and upgraded time, which related to external status. The final factor loaded elements that related to pathway program, friend recommendation, and campus visits which relate directly to the pathway program. There were two factors that only had two items and low Cronbach's Alpha ($\alpha < .70$) making this scale suspect to poor construct validity. Repeated analysis specifying three factors did not yield any better results. For this reason, this scale could not be reduced to more compact factors when used as a measurement of motivation styles. This scale still holds valid information regarding the reasons a graduate would choose a particular regional airline, and each item can be compared with the motivation styles to determine individual, inter-item correlations. This information is valuable for regional airlines in trying to determine how best to attract new hire pilots to their organization.

Academic Motivation Scale

A preliminary analysis of the measures was conducted to check for response rate and reliability (Refer to Table 1 for detailed results relating to all measurements in this survey). The amotivation scale had a low mean response value ($M = 2.60$) and a high Cronbach's alpha ($\alpha = 0.96$). This is not alarming in this case as successful graduates of an aviation degree program are unlikely to reach their position as a regional airline pilot while exhibiting amotivation, given the

level of dedication and commitment (both time and financial) required to successfully reach this stage in their career. The external motivation scale initially yielded an adequate yet low Cronbach's alpha ($\alpha = .70$), however it was determined that a removal of one of the items ("Because with only a high-school degree I could not attain a high- paying job at an airline") would yield a Cronbach's alpha that was in the good range while maintaining the integrity of the scale. The extrinsic – introjected, extrinsic – identified, and intrinsic scales all yielded Cronbach's alpha values between .80 and .90 which indicated reliability. The scales were then averaged into a new variable to determine the appropriateness of the distributions. All average scales were within normal ranges for skewness and kurtosis with the exception of the amotivation scale which yielded a skewness that was just outside of normal bounds but still acceptable for further analysis.

Furthermore, exploratory factor analysis was performed to assess construct validity. Principal Axis Factoring (PAF) with Direct Oblimin rotation was conducted on the data set, specifying a five-factor solution in anticipation of detecting one factor for each motivation style. The resultant five-factor solution explained 81.9% of the variance in the data. However there were numerous cross- loadings and the extrinsic motivation – Identified scale loaded with the amotivation scale. Extrinsic motivation – introjected was identified by one factor, intrinsic motivation was determined by another factor, and the combination of amotivation and extrinsic motivation – identified loaded onto a third factor. The remainder of the scales cross-loaded with each other.

A second-factor analysis was conducted after the removal of the extrinsic motivation – identified scale from the analysis as it was not theoretically different from the amotivation scale based on the loadings found in the previous analysis. This resulted in a four-factor solution

which accounted for 79.3% of the variance in the data. Items for extrinsic motivation – introjected loaded onto one factor, extrinsic motivation – external onto another factor, amotivation onto a third factor, and intrinsic motivation onto the fourth factor. See Table 2 for more detail regarding the factor analysis completed on these scales.

Table 2. Factor Analysis

Items	Amotivation/ Extrinsic Identified	Introjected	Intrinsic	External
AMot_1	.88			
AMot_2	.90			
AMot_3	.96			
AMot_4	.95			
ExtMotInt_1		.73		
ExtMotInt_2		.66		
ExtMotInt_3		.97		
ExtMotInt_4		.87		
IntrinMot_1			-.61	
IntrinMot_2			-.90	
IntrinMot_3			-.91	
IntrinMot_4			-.70	
ExtMotExt_1				.31
ExtMotExt_2				.48
ExtMotExt_3				.56
ExtMotExt_4				.59
Eigenvalues	7.29	2.87	1.48	1.05
% Variation	45.6	18.0	9.2	6.5
α	.96	.87	.92	.81

Findings

Descriptive Statistics

In general, aviation graduates report crew base and hourly pay as the most important factors when choosing a regional airline. Time to upgrade and the recommendation of a friend are the next most important factors. The least important factors are the pathway programs, and campus visits. An analysis of the motivation scales indicates that extrinsic – identified and

intrinsic motivation styles had the highest means. This finding is expected as aviation degree students tend to be highly self-driven students. Also not surprisingly, amotivation had the lowest mean. Given the cost and complexity of completing the aviation degree program, students who lack motivation are likely to drop-out of the program before graduation.

Correlation Among Scale Items

Bivariate correlations were conducted on both scales. The strongest, positive correlation within the motivation scale was between the intrinsic and the identified motivation types. This result is reasonable as there are strong similarities between these types of motivation. Statistically significant, positive bivariate correlations were found between the external regulation, introjected, identified, and intrinsic motivation. As such it was not unexpected that amotivation had a statistically significant, negative correlation with all of the remaining motivation scales except the introjected scale. This finding is supported by the literature that indicates amotivated students complete an activity without valuing the activity or feeling competent to complete the activity.

Bivariate correlations within the preferences for choosing a regional airline scale found statistically significant, positive correlations between campus visits and pathway program, pathway program and flow to major, crew base, and hourly pay, signup bonus and flow to major, signup bonus and favorable working agreement. Weaker, statistically significant bivariate correlations were found between hourly pay and friend recommendation, signup bonus and hourly pay, aircraft type and upgrade time, aircraft type and friend recommendation, campus visit and friend recommendation. One statistically significant (weak) negative correlation was found between pathway program and crew base.

Finally, correlations between the motivation styles and the preferences for choosing a

regional airline scale found several statistically significant relationships. The strongest positive correlations were between identified motivation and crew base, as well as identified motivation and hourly pay. Weaker, statistically significant, positive correlations were found between intrinsic motivation and friend recommendation, intrinsic motivation and crew base, introjected motivation and campus visits, external motivation and time to upgrade, amotivation and pathway program, and external motivation and crew base. Additionally, there were statistically significant negative correlations between amotivation and crew base, amotivation and hourly pay, and amotivation and friend recommendation.

Discussion

Motivation to Complete an Aviation Degree

Students who complete an aviation degree program typically do so because they believe that an aviation degree will provide the best outcome in their career. They are willing to accept the high price of tuition and tedious work to improve their chances of attaining their career goal.

It is common for a graduate of an aviation degree program to indicate that they have always wanted to fly from a very young age or that they are willing to fly for little monetary remuneration. These students want to learn everything there is to learn about the field of aviation before they begin working with an airline. These students would certainly make up the intrinsically motivated group. It is not a surprise to see this motivation style being measured the second highest by the motivation scale.

Amotivated students typically never complete the aviation degree program. According to Bjerke and Healy (2010), it is common to see students begin the aviation degree program but leave in their first semester of the program where 8.2% of students leave or after the first year where 17.4% of students leave the program. An aviation degree program has a steep learning

curve in the first semester and students who are not motivated will have significant difficulty in successfully completing the first year of the program. For this reason, it is not a surprise to see the amotivation measured well below all of the other motivation styles measured by this scale.

Impact of Student Motivation on Choice of Regional Airline

Students who successfully complete an aviation degree program often have a clear idea of what they want to attain in their career. Each student has a somewhat different plan for how they will achieve their career goals. In choosing a regional airline, there are some practical concerns that apply to nearly all graduates: making enough money to meet their immediate financial obligations, being able to live in a location that is near family or friends, and attaining the ultimate career goal of reaching a major airline. Along with these practical requirements, graduates of aviation degree programs often have preferences that direct their decision in choosing a regional airline.

Graduates who demonstrated extrinsic – identified motivation style were significantly more likely to choose a regional airline that had a higher hourly pay and a favorable crew base. These graduates are making their practical needs (financial obligations in this case) their primary concern. They may have a particular regional airline that they would love to fly for, but they are choosing a regional airline that will provide enough hourly pay to cover student loan debt and other financial obligations. Also, they are hoping for crew bases that are in a location that offers affordable housing or friends and family nearby with whom they may live.

Graduates who were intrinsically motivated during their degree program also shared similar practical preferences in a regional airline, but the strongest correlation between the intrinsic motivation scale was with the recommendation of a friend item. Students who are intrinsically motivated during the completion of their degree program chose a regional airline

based upon the recommendation of a friend who currently works at the company. These graduates are seeking a place that is enjoyable, and supportive of their career aspirations. In short, they want to enjoy the journey as they work towards the completion of their career aspirations.

Graduates who were amotivated had a weak correlation with the pathway program preference. The amotivated group is a very small minority of the entire population measured. The pathway program may be the one reason that an amotivated student would complete an aviation degree program. A pathway program offers a direct connection between the aviation student and their career goal. If a student is only completing the aviation degree program in order to be a part of the pathway program, they will demonstrate amotivation towards their degree program as merely a means to an end. To these students, there is little value in the degree program itself, other than providing them a quicker method of achieving their career goals.

Implications and Future Research

This research gives some clarity on how aviation degree program graduates are motivated during the completion of their degree program and when choosing a particular regional airline. There are implications for the recruiting practices of regional airlines. Additionally, current and future aviation degree students can benefit from seeing the type of motivation style that is most common to successful graduates of the program.

Regional airlines could benefit by appealing to the motivation styles that best suit their workplace. A determination of motivation style should be done early in the student's educational experience. It is possible that both the student and airline would benefit from a standard biographical questionnaire that a soon-to-be graduate would complete. This questionnaire could measure the motivation style of a student, and pair them with a particular regional airline which

offers a workplace that best suits their career aspiration and needs.

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Limitations

Given the exploratory nature of this study, there are some limitations that should be noted. One such limitation is the limited sample of current students and graduates. Future research in this area should include a sampling of multiple aviation degree programs as well as regional airline pilots who have not completed an aviation degree program. It would also be valuable to get a larger sample from current students of an aviation degree program. By getting a more diverse sample, the findings could be generalized to a broader population.

Another limitation of this study lies in the variable nature of employee preferences, especially as the new hire pay improves. In recent months, some regional airlines have started offering starting pay that may mitigate some of the cost of living concerns for new hire pilots (Airline Pilot Central, 2016). As salaries and benefits improve overall, the reasons that pilots will

choose a particular regional airline to work for may also change.

Conclusion

This research provides a first-look at the transition between an aviation degree program and the regional airline. This is a relatively new area of research and offers plenty of opportunity for future research. In future research efforts, it would be valuable to measure the core needs of an aviation degree graduate and compare these results with motivation styles and regional airline preferences. It would also be valuable to measure newly hired regional airline pilots who have not completed an aviation degree to compare these results with the findings of this research.

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Study 2

Using Structural Equation Modelling to Inform Military Aviation Career Aspirations

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Abstract

Military aviation faces challenges in attracting and retaining pilots during a time of high demand for career airline pilots. This research seeks to uncover the factors influencing a collegiate student's decision to pursue (or not pursue) a career in military aviation. Quantitative measures were conducted on data received from a survey of students enrolled in aviation courses at the University of North Dakota. It was found that patriotism or a desire to serve their country influences a collegiate student to pursue a career in military aviation. For those students who do not seek a career in military aviation, a perception of physical limitation and a lack of career control are contributing factors. These findings provide the military with valuable insight on how to attract sufficient pilots to meet the staffing needs of the military. It may be useful to provide clear guidelines of the physical limitations for attaining a flying role within the military along with alternative pathway options that provides enlisted airmen with some choice in their career progression.

Using Structural Equation Modelling to Inform Military Aviation Career Aspirations

The aviation field is faced with the challenge of attracting a sufficient number of pilots to meet current and predicted staffing shortages (Higgins et al., 2013). The regional and major airlines in the United States have developed incentive programs in order to attract pilots to their organizations (Bjerke et al., 2016). Furthermore, airlines have created collegiate pathway programs in order to attract future employees while they are enrolled in post-secondary education. Military aviation is also faced with the challenge of attracting and retaining pilots during this time. The United States Air Force (USAF) has increased recruitment efforts while creating financial incentive programs in order to retain pilots (Mattock, Hosek, Asch, & Karam, 2016). U.S. Air Force chief of staff, General David Goldfein informed Congress that, "the U.S. does not produce enough pilots to adequately service commercial business and military aviation", further indicating that the U.S. Airforce is 2,000 pilots short (Wall & Tangel, 2018). Limited research has been conducted on how the students attending collegiate aviation programs view a career in military aviation in relation to other careers within the aviation field. Before exploring the existing research, it is important to note that military aviation careers, specifically flying careers, require different recruitment practices than traditional military careers given strict entrance requirements and difficult training programs (Alvarado, 2019).

There is an existing body of research providing insight on military careers, albeit not focused directly on flying careers in the military. The literature informing the present research centers around why a college student would choose a career in the military. General Goldfein declared desire for 29,000 by 2024 and an additional 2,000 pilots just to meet current shortfalls (Alvarado, 2019). The post-COVID demand for pilots within the commercial airline sector is still expected to occur as a result of baby-boomer retirements making it more challenging to

recruit young aviators into a 20-year commitment in the military.

The first factor to be considered regarding military aviation career aspirations relates to the financial incentives of joining the military. Mann (2011) reported that the entry-level wage for most military recruits is 12% lower when compared with a civilian sector entry-level wage. Furthermore, Alvarado (2019) found that enlisted personnel made close to 30% less than their civilian counterparts (conducting the same job) but went on to say, "military pay may not be the most lucrative especially when compared to the civilian market but is in most cases enough to support most military families, albeit not extravagantly" (p.13). It is also known that enlistments in the military are widely affected by the macroeconomic conditions, "when the economy is expanding, military recruitment and retention suffer" (Mann, 2011, p.2). There are positive financial benefits to joining the military however. First, the military provides a retirement package for anyone who has served at least 20 years (Segal et al., 1999). Additionally, the military-paid tuition and training expenses are being perceived as a strong benefit for recent high school graduates (Stafford & Griffis, 2008). Does joining the military offer enough of a financial incentive to attract someone from a career in the civilian sector?

Another influence on military career choice lies within two separate but related concepts: the military/family connection, and patriotism. Family has some influence on career paths in general (Hargrove, Inman, & Crane, 2005), but does this small but significant family influence pattern hold with individuals considering military careers? Two competing perspectives could influence the answer to this question: children of military families could be more likely to enter the military as a result of a parent's service, or children who have no career direction may be influenced to enlist in the military. It is common that career decisions are joint decisions between students and their parents (Stafford & Griffis, 2008).

The concept of patriotism (Kleykamp, 2006) plays a role in whether or not individuals choose a career in the military (Mann, 2011). The research of both Mann and Kleykamp do not specifically relate to military aviation and therefore may miss the influence of patriotism of a student seeking a career in aviation. Rech (2014) highlights that military demonstrations at airshows are a recruitment tool and could influence young people to join a career in military aviation. It is therefore possible that young people could be influenced to join the military and serve their country as a result of watching military demonstrations at airshows. There are gaps in the existing literature that require deeper analysis to uncover the influence of patriotism in the career aspirations of young aviators.

A career in the military requires recruits to meet military entrance physical fitness standards. One such challenge is highlighted in the following quote, "nearly seventy percent of 17-24 year olds are ineligible for service for reasons ranging from body weight, past drug use, medical issues, and/or criminal records" (Alvarado, 2019). The culture of obesity that is prevalent in the U.S. (Flegal et al., 2016) has reduced the number of qualified young Americans who can serve within any branch of the military (Bigelman et al., 2019). Pilot careers within the military have even stricter standards (Niebuhr et al., 2008), further limiting the number of qualified recruits (Yamane GK & Yamane, 2007). Do collegiate aviation students perceive the physical entrance requirements to be a limiting factor in choosing a career in the military?

Another factor to consider with respect to a collegiate student's military career aspiration is perceived career control. The military cannot guarantee that a recruit will be hired into a specific position within the military (Rumsey & Arabian, 2014). For example, a young aviator could be recruited into a fighter position, only to be changed to a helicopter position in order to fulfill specific requirements. This leaves a recruit with a limited amount of control over their

career path once they have joined a particular branch of the military. If a young recruit has aspirations of becoming a fighter pilot but is not able to follow that career path, it may create a sense of frustration in new recruits with very specific career aspirations. Does this perceived lack of career control influence a young aviator's decision to join the military?

Given the current career paths for collegiate aviation students to choose from, the regional and major airlines have focused their attention on offering financial incentives to attract new pilots. A student who is interested in a career in military aviation could be choosing that career path for more altruistic reasons like serving their country or to satisfy family desires. It is possible that the financial benefits of choosing a career in military aviation are not at the forefront of a student's mind; however, the long-term security, payment of educational expenses, and strong retirement plans may, in fact be a motivator. It is also possible that military recruitment tactics have attempted to enlighten students on the financial benefits of a career in the military.

Without an existing conceptual framework to base this research upon, a new one will be proposed. The existing body of research that indicates patriotism, family influence, and financial benefits will influence a young person to pursue a career in military aviation. Conversely, a perceived medical limitation or a perceived lack of career control will deter a young person from pursuing a career in military aviation. In addition, it is proposed that family influence will predict choosing a career in military aviation.

The purpose of this research was to survey collegiate aviation students to examine what percentage are considering a career in military aviation. Additionally, this research uncovered some of the underlying reasons that lead a student to choose a career in military aviation using a new scale developed for measuring student military career aspiration. As a part of this research,

a new scale was developed and validated in order to measure student military career aspirations. Finally, a new hypothesized structural model was tested in which patriotism and family influence predict the financial benefits of choosing a career in military aviation. This research was guided by four research questions:

1. What percentage of collegiate aviation students are considering a career in military aviation?
2. Of the students who are considering a career in military aviation, how is their decision influenced by patriotism, family history, and financial benefits?
3. Of the students who are not considering a career in military aviation, how is their decision influenced by lack of career control, perceived lack of medical deficiency, or other general lack of interest?
4. Do students who score highly in patriotism and are influenced by their family when making career choices have a higher likelihood of choosing a career in military aviation?

Method

Participants and Procedure

In order to develop greater insight regarding the military career preferences of collegiate aviation students, a survey was conducted in the spring of 2018. The research was conducted under Institutional Review Board (IRB) approval. Participants were asked to rate their level of agreeance with the question, "I am considering a career in military aviation" on a four-point, Likert-type scale (1 = *Strongly agree*; 4 = *Strongly disagree*). Students who indicated some form of agreement regarding a career in military aviation were directed to a subscale that measured their reasons for interest in the career. Students who indicated some form of disagreement regarding a career in military aviation were directed to a subscale that measured their reasons for

not being interested in the career.

Participants were 260 undergraduate, collegiate aviation students attending a large institution in the Midwestern United States. Age of the participants ranged from 18 to 38 years ($M = 21$; $SD = 3.17$) and 26 of the participants were female . 90 (35%) of the respondents indicated some form of agreement when asked whether they were considering a career in military aviation. After accounting for missing responses, the final dataset of participants who indicated a willingness to choose military aviation as their career was 85. The final sample consisted of 14 freshmen, 30 sophomores, 22 juniors, and 19 seniors. All measures were nearly normal with skewness and kurtosis within an acceptable range (Table 1 and Table 2). The aviation field is a male-dominant industry and the sample drawn for this research is indicative of the overall collegiate aviation population.

Table 1. Descriptive Statistics for Students with Military Career Aspirations.

Measures	N	Mean	SD	Minimum	Maximum	Skewness	Kurtosis
Status	85	2.54	1.02	1	4	.06	-1.16
Gender	85	1.08	.28	1	2	2.99	6.99
Age	241	21.07	3.17	18	38	2.59	8.44
Military Career	245	2.87	.98	1	4	-.39	-0.93
Patriotism 1	85	1.84	.75	1	4	.52	.08
Patriotism 2	84	1.48	.57	1	3	.67	-.61
Patriotism 3	85	2.12	.92	1	4	.50	-.55
Patriotism 4	85	3.05	1.00	1	4	-.73	-.61
Family Influence 1	85	2.47	.88	1	4	.09	-.74
Family Influence 2	85	2.51	1.01	1	4	.19	-1.12
Family Influence 3	85	1.58	.71	1	4	.80	-.67
Family Influence 4	85	2.52	.83	1	4	.07	-.59
Financial Benefit 1	85	2.00	.72	1	4	.37	-.08
Financial Benefit 2	85	1.98	.80	1	4	.73	.33
Financial Benefit 3	85	1.78	.61	1	3	.14	-.55
Financial Benefit 4	85	1.80	.67	1	4	.72	1.14

Table 2. Descriptive Statistics for Students without Military Career Aspirations.

Measures	N	Mean	SD	Minimum	Maximum	Skewness	Kurtosis
Status	160	2.48	.96	1	4	-.01	- .98
Gender	160	1.12	.32	1	2	2.34	3.47
Age	241	21.07	3.17	18	38	2.59	8.44
Freshman							
Sophomore							
Junior							
Senior							
Military Career	245	1.71	.46	1	4	-.89	-1.23
Lack Control 1	159	2.23	1.04	1	4	.42	-.99
Lack Control 2	159	2.47	.95	1	4	.04	-.95
Lack Control 3	157	1.99	.96	1	4	.61	-.68
Lack Control 4	158	2.06	.88	1	4	.44	-.61
Medical Limitation 1	158	2.89	1.08	1	4	-.46	-1.13
Medical Limitation 2	158	3.27	1.01	1	4	-1.12	-.08
Medical Limitation 3	159	3.25	.92	1	4	-1.09	.26
Medical Limitation 4	157	2.62	1.10	1	4	-.07	-1.35
General Limitation 1	158	2.82	.87	1	4	-.34	-.55
General Limitation 2	158	2.10	1.02	1	4	.54	-.86
General Limitation 3	158	2.53	1.07	1	4	-.07	-1.25
General Limitation 4	157	2.65	.92	1	4	.19	-1.03

Measures

Respondents were divided into two exclusive categories by answering a question of whether they were considering a career in military aviation or not. Those respondents who indicated affirmatively were directed to answer questions relating to their reasoning for choosing a career in military aviation. The remaining respondents who indicated that they were not considering a career in military aviation were directed towards a series of questions relating to their rationale for not pursuing a career in military aviation.

Of those participants who indicated that they were considering a career in military aviation, their reason for selecting a career in military aviation was measured using a new scale developed for this research. The scale was developed to measure student's patriotism, family influence, and the financial benefit of choosing military aviation as a career. The final scale

contained 12 items measured on a 4-point Likert style scale (1 = *Strongly agree*; 4 = *Strongly disagree*). All items were positively worded, for example, "Military services is of high importance to my family*"* is an example of a question asked to measure family influence on choosing a career in the military. One item was worded in a way that a high score would indicate a low amount of patriotism, "I would only serve in the military if I could be a pilot*"*. This item was reverse-coded so that for all of the 12 items, a high score would indicate a high level of the latent concept being measured. A sample question asked to measure the financial benefits of joining the military is as follows: "I would choose a career in military aviation because it provides me with a secure retirement and benefits (pay, health care, etc.).

To assess construct validity, exploratory factor analysis was performed on the scale measuring why students would choose a career in military aviation. Principle Axis Factoring (PAF) with Direct Oblimin rotation was conducted on the scale. On the first attempt, the scree plot indicated a four-factor solution; however, the initial plot lacked a strong break point and was inconclusive. A follow up factor analysis was conducted constraining the analysis to three-factors as supported by the conceptual framework. This final analysis yielded a three-factor solution with factors representing patriotism (three items), family influence (three items), and financial benefit (four items). The resultant three-factor solution explained 37% of the variance in the dataset, and they aligned with the previously anticipated factors. Tests of internal reliability for the scales was conducted with poor initial results (Family Influence $\alpha = .64$, Patriotism $\alpha = .59$, Financial Benefit $\alpha = .55$). Three items loaded poorly with communalities of less than .30. After dropping these poorly loading items the reliability improved (Family Influence $\alpha = .79$, Patriotism $\alpha = .70$, Financial Benefit $\alpha = .60$). After reading the items under the Financial Benefit sub-scale it became clear that financial benefit is a challenging topic to

reliably measure. Table 3 shows the factor analysis loadings for the final model.

Table 3. Military Career Aspiration Factor Analysis.

Items	Patriotism	Family Influence	Financial Benefit
Patriotism 1	.81		
Patriotism 2	.76		
Patriotism 3	.44		
Family Influence 1		.61	
Family Influence 2		.83	
Family Influence 4		.70	
Financial Benefit 1			.34
Financial Benefit 3			.77
Financial Benefit 4			.63
Eigenvalues	3.06	1.46	1.27
% Variation	38	35	27
α	.70	.79	.60

Of those participants who indicated that they were not considering a career in military aviation, their rationale for not choosing a career in military aviation was measured using a new scale developed for this research. The scale was intended to measure whether a lack of career control, physical limitations to entrance, or a general lack of interest in joining the military factors affected a respondents career selection outside of the military. The final scale contained 12 items measured on a 4-point Likert style scale (*1 = Strongly agree; 4 = Strongly disagree*). All items were positively worded, for example, "I am not interested in a career in military aviation because I have less control over my career trajectory" is a sample of the questions asked to determine whether lack of career control was a factor in not joining the military. An example of an item measuring perceived physical limitations to joining the military asked participants to rate their level of agreeance with statements like the following: "Military aviation requires

maintaining good physical conditioning that I feel I cannot attain". In order to measure the general lack of interest for joining the military, participants were asked to rate their level of agreeance with statements like the following: "I am not choosing a career in military aviation because I have no interest in the field".

In order to assess construct validity of the second scale, exploratory factor analysis was performed on the scale measuring why students would not choose a career in military aviation. Principle Axis Factoring (PAF) with Direct Oblimin rotation was performed on the dataset and an analysis of the scree plot favored a three-factor solution; however, all of the items loaded onto two factors with three items that were weakly cross-loaded (communalities of less than .30) onto both factors. A subsequent factor analysis was attempted after removing the three items that loaded poorly. This did not yield improved results. The items measuring general lack of interest cross-loaded on several other factors and the physical limitations items were split between two separate factors. After repeated analysis, it was determined that this scale was not effective in accurately measuring the three latent variables.

Further analysis of the general lack of interest construct yields insight into why this scale is cross-loading. Within the general lack of interest scale, the questions lack a conceptual connection with one another. The first question related with compensation, the second question related with the contractual commitment required of service, the next question related to a lack of general interest in the field, and the final question related to not enough information regarding a career in military aviation. Each of these items, though individually they inform research on this topic, do not have a logical latent construct. For this reason, it was determined that the scale should be modified to exclude items measuring general lack of interest. A final PFA with Direct Oblimin rotation was conducted specifying two factors. The two-factor solution explained 45%

of the variance in the dataset and the data aligned on the lack of career control and physical limitation factors with strong loadings on both factors. Primary analysis found one lack of career control item weakly cross-loaded. Removing that item yielded better results.

Test of internal reliability for the scales was conducted with poor initial findings (General Lack of Interest α = .44, Lack of Control α = .67, Physical Limitations α = .68). Attempts to improve the General Lack of Interest factor yielded very weak improvements (α = .47) further highlighting the weakness of these items in measuring the latent variable. Lack of Control improved by dropping one item (α = .75). These findings supported the earlier findings that as a whole this scale is not an effective measure of the initial three latent variables. After removing the General items, the remaining two factors have value in further inferential analysis. Table 4 outlines the specific details of the factor analysis of non-military career respondents.

Table 4. Non-military Career Aspiration Factor Analysis.

Items	Lack Control	Medical Limitation
Lack Control 1	.67	
Lack Control 2	.53	
Lack Control 4	.94	
Medical Limitation 1		.79
Medical Limitation 2		.55
Medical Limitation 3		.50
Medical Limitation 4		.55
Eigenvalues	2.15	1.98
% Variation	24	21
α	.75	.68

Findings

Descriptive Statistics

The survey received a total of 245 participants. Of those participants, 85 (34.7% of the overall sample) indicated some form of agreement when asked whether they were considering a career in military aviation (Table 1). Furthermore, 16.5% were freshmen, 35.3% were sophomores, 25.9% were juniors, and 22.4% were seniors. The remaining respondents indicated some form of disagreement when asked whether they were considering a career in military aviation (Table 2). Of this group, 18.1% were freshmen, 31.9% were sophomores, 34.4% were juniors, and 15.6% were seniors.

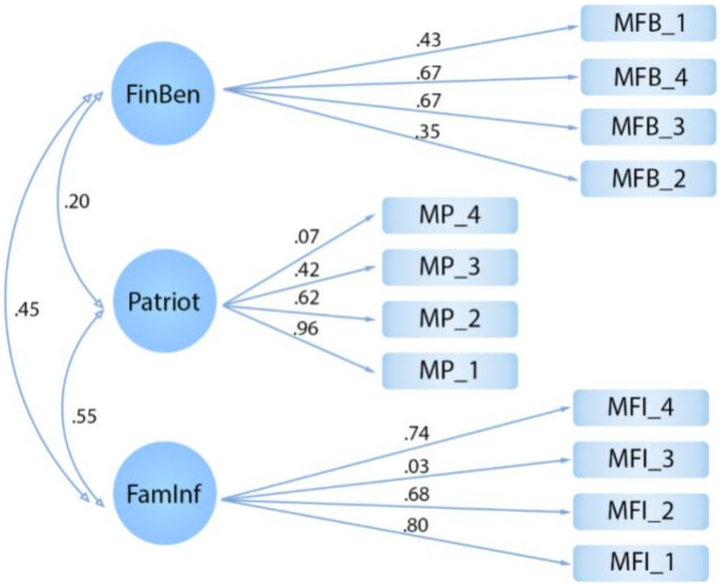
Confirmatory Factor Analysis

The analyses were conducted in the *R* statistical analysis software using the *lavaan* package. Model fit was tested with the chi-squared test of difference between the implied and reproduced correlation matrices, the standardized root-mean-square residual (SRMR), the comparative fit index (CFI), and the root-mean-square error of approximation (RMSEA). The chi-square test is sensitive to sample size; however, the dataset used in this research had less than 100 cases, making it a reasonable measurement of goodness of fit. In addition, an SRMR $\leq .08$, CFI $\geq .95$, and RMSEA $\leq .06$ were used as more strict measurement criteria (Hu & Bentler, 1999).

A confirmatory factor analysis (CFA) using maximum likelihood estimation was conducted. Figure 1 contains a graphic of the CFA model tested. The first attempt yielded poor fit ($\chi^2 = 76.59$, df = 51, $p = .01$; RMSEA = .08, CFI = .87, SRMR = .09). After a review of the individual loadings, two items were noted as poorly loading on their respective latent variables. Items were dropped, one at a time, and fit indices were observed. In the final model, dropping

only the Family Influence 3 item brought the model fit within acceptable standards (χ^2 = 51.20, df = 41, p = .13; RMSEA = .05, CFI = .95, SRMR = .08). Convergent validity was not completely attained as four of the 11 loadings were below .70 and only one of the average variance explained (AVE) calculations yielded results above .50 (Hair et al., 2010). A test of the discriminant validity was conducted. In all cases, the AVE was greater than the squared correlation values confirming discriminant validity.

Figure 1. Confirmatory Factor Analysis.

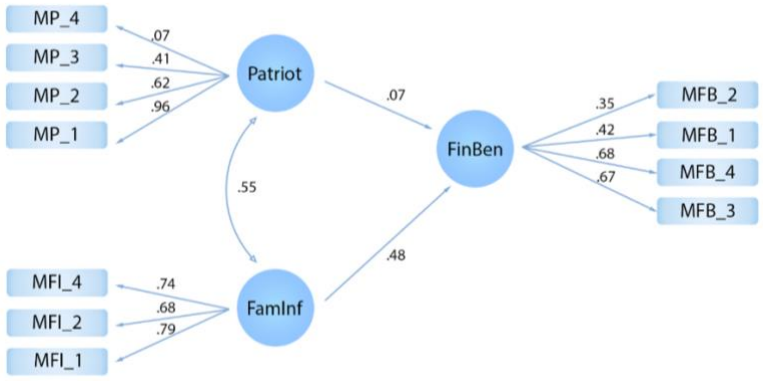


Structural Equation Model (SEM)

After the CFA, a structural equation model (SEM) based on the hypothesized model shown in Figure 2 was tested. The first estimation of the model yielded acceptable results (χ^2 = 51.20, df = 41, *p* = .13; RMSEA = .05, CFI = .95, SRMR = .08). Each of the structural paths had significant loadings with the exception of the patriotism 4 item. A second analysis after dropping this path yielded an improvement from the first model (χ^2 = 32.24, df = 32, *p* = .46; RMSEA = .01, CFI = .99, SRMR = .06). Despite these strong results, the final model did not include

dropping the patriotism 4 item in order to maintain the scale validity as well as the generalizability of this model.

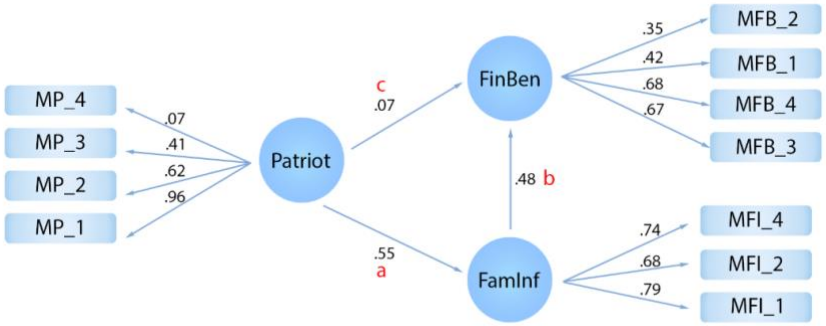
Figure 2. Structural Equation Model.



Mediation

Next, a test of moderating effects of family influence on patriotism and financial benefits was conducted to test if financial benefit of choosing a military career were influenced by family (Figure 3). Bootstrapping tested the indirect effect of family influence on financial benefits by resampling the data 500 times. The 95% confidence intervals did not contain zero for any of the paths however the path between family influence and financial benefit (b) was not significant (p = .08) therefore, mediation was not present in this model. It is possible that a more robust sample would yield significant results.

Figure 3. Mediation Model.



Multi-Group Modelling

Finally, a multi-group model was tested for invariance to determine if freshmen and sophomores (first group) had similar responses to juniors and seniors (second group). These groups were selected because typically students become more decisive in their career decisions once they reach their junior year as they get closer to graduation. First, a test of configural invariance was conducted to determine whether differences in structure were present between the groups found very little difference between the models (equivalent fit indices and similar loadings within each factor). This model was used as a reference for determining changes with further model constraints. A test of metric invariance was conducted by first constraining the factor loading paths and comparing these results with the previous results obtained in the configural model (χ^2 = 109.17, df = 92; RMSEA = .07, CFI = .91). The new model (χ^2 = 115.89, df = 100; RMSEA = .06, CFI = .92) was not significantly different, indicating no significant differences between the groups regarding the measures. Finally, all regression paths were constrained and the resulting model was compared with the configural model. The results (χ^2 = 117.82, df = 104; RMSEA = .06, CFI = .93) were again not significantly different from the configural model and therefore structural invariance was found, indicating that the responses from freshman and sophomore participants were not different from those of junior and senior participants.

Discussion

The purpose of this research was to gain more insight into how collegiate aviation students view a career in military aviation. More specifically, this research was focused around determining whether students chose a career in military aviation for patriotic reasons, due to family influence, or for the financial benefits. Additionally, this research attempted to determine

whether a perceived physical limitation, a perceived lack of career control, or a general lack of interest were reasons for students to not choose a career in military aviation. The findings of the present research indicate that the survey instrument that does not adequately measure the latent constructs relating to why a collegiate aviation student would or would not choose a career in military aviation.

For those students who would choose a career in military aviation, the patriotism construct proved to be an indicator of why they would make this career choice. This finding supports the literature indicating individuals who join the military are influenced to do so by patriotism towards their country (Kleykamp, 2006). The financial benefit latent construct was not a strong indicator of why someone would choose a career in military aviation. This is supported by recent literature that indicates military pay and retirement benefits are below a comparative civilian career (Alvarado, 2019). A somewhat surprising finding of this research is the lack of family influence on choosing a career in the military given what the literature indicates regarding parents having a strong influence on their children's career pursuits (Hargrove, Inman, & Crane, 2005; Stafford & Griffis, 2008). It is possible that a stronger influence on choosing a military career path among children of military families may be their tendency to avoid military service because of their experience of consistently moving during the formative years of their lives (Alvarado, 2019); although, this would not apply to individuals who do not come from military families. Future research in this area should include a scale measuring family influence on the pursuit of a career in military aviation.

For those students who would not choose a career in military aviation, the physical limitation latent construct was the most influential factor. This was supported by past studies indicating that the strict medical entrance requirements provides a considerable limitation for

young American's. As highlighted, "nearly seventy percent of 17-24-year olds are ineligible for service for reasons ranging from body weight, past drug use, medical issues, and/or criminal records" (Alvarado, 2019, p. 9). A surprising finding from this research is that the lack of career control did not show stronger results. This has historically been a reason for pilots to avoid careers in military aviation specifically if they are fixed-wing pilots seeking fighter pilot positions (Alvarado, 2019). It is possible that the participants of this research had not thought deeply enough about the topic of a career in military aviation to consider lack of career control as a limiting factor.

Strengths and Limitations

Both the CFA and SEM had good fit with the data. This indicates that the hypothesized structure was mostly supported, a somewhat surprising finding given the fact that the scales had not been previously tested and these concepts are relatively new. Additionally, there was very little missing data which allowed for these analyses to be conducted with reasonable power. Also of value was the finding that 32.6% of the participants would consider a career in military aviation, a much higher number than expected.

There were several limitations of this research. First, the survey bifurcated respondents based on their likelihood of selecting a career in military aviation. Avoiding this split would have allowed more respondents to answer questions relating the positives of a career in military aviation, thereby providing more data to analyze. Also, the respondents' likelihood to choose a career in military aviation was measured using a single item on a four-point Likert style scale. Future studies should measure likelihood of choosing a career in military aviation with several items to increase the validity and reliability. In the future, modifications to the existing survey would provide a strong framework for deeper analysis in the topic area. By utilizing more

proven measures, the structural and mediational models would show improved results. Additionally, sampling students from other collegiate aviation programs would provide a more accurate sample of the population.

A more detailed view of the limitations of this study relates to the low reliability of the financial benefit scale. This concept has many interconnected components and is therefore difficult to accurately measure using a four-item scale. Future iterations of this survey should include a more content valid scale measuring the financial benefits of different career choices. The general lack of interest in joining military aviation items also had low reliability. Future utilization of this scale as a whole will require a change in the general lack of interest items. Including parts of an existing scale on interest may yield improved results. Further, the lack of control and physical limitations scales would benefit from improved clarity and differentiation between items.

Finally, future research with this scale should not bifurcate the respondents by whether they are interested in a career in military aviation. It is possible to slightly re-word the items slightly to allow all respondents to answer these questions in order to gain a more complete sample.

The topic of career aspirations as it relates to military aviation is important to the future of the field. The US military does very detailed research of their own recruits but little time is spent researching the students attending collegiate aviation programs. The present research found one possible model that could help inform the future recruitment practices of military aviation. It is likely that financial benefits, family influence, and patriotism have an influence on a student choosing to enter the military aviation field. Furthermore, although these students do not consider military aviation for financial reasons, the financial benefits (especially when

compared with civilian fields) should be highlighted as they have an influence on whether a student will pursue a career in military aviation. Above all, the constructs chosen in for this research do not yield high positive results. Further research is needed to determine what constructs influence a collegiate aviation student's decision to pursue a career in military aviation.

Implications

The findings of this study are valuable to military recruitment practices. It is important that the military continue to offer air show demonstrations as a recruitment tool. Furthermore, military aviation would benefit from providing recruits with more career control and flexibility. Finally, the military as a whole will have to provide young people with guidance for meeting the physical demands of a position in the military. It is possible that the military could develop and market physical training programs and make them easily accessible in an attempt to foster healthy habits among young Americans.

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Study 3

Student Perceptions of Career Pathway Programs

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Abstract

In a time when demand for airline pilots is remains strong despite the temporary influence of the COVID pandemic, airlines have had to use a variety of methods to attract candidates to work for their company. One such method is career pathway programs that streamline collegiate aviation students career path from higher education to their ultimate goal of becoming an airline pilot. This research examines collegiate aviation student's perceptions of these pathway programs using a mixture of quantitative and qualitative methods. The present research found that collegiate aviation students consider career pathway programs a good way to accelerate their career progression. Additionally, students choose career pathway programs that align with their desires for future employment: bases in locations that they want to live, how quickly they can attain their career goal, and the benefits offered by the company during their time in the pathway program. This research will provide valuable insights for increasing the influence of career pathway programs both for organizations and for collegiate aviation students.

Student Perceptions of Career Pathway Programs

Airlines around the world are facing staffing shortages (Higgins et al., 2013; Bjerke et al., 2016; Lutte, 2018). These shortages have had an immediate effect on the pilot workforce where maintaining adequate staffing has been and is forecast to continue to be a challenge for the foreseeable future (Lutte & Lovelace, 2016). In response to these challenges, airlines in the United States have implemented several initiatives. Improvements to compensation and benefits packages, new hire incentive and bonus programs, as well as career pathway programs have all been responses to these shortages (Lutte, 2018). There is a growing body of research on the pay, bonus, and incentive programs (Crouch, 2020; Klapper & Ruff-Stahl, 2019; Lutte & Mills, 2019; Lutte and Lovelace, 2016), however fewer studies have focused on career pathway programs for airline pilots. The purpose of this study is to gain more insight into collegiate aviation student perceptions of career pathway programs.

Defining Career Pathway Programs

Career pathway programs are not new but have only recently been developed and utilized in the airline industry. A career pathway, as it relates to airline pilot training, "provides an opportunity for students to become familiar with the corporate culture of a given airline and get to know one another before committing to the airline," (Lutte & Mills, 2019). Every career pathway program is slightly different; however, most programs allow students of any status (freshman through senior level) to join without any commitment to work for the airline. In order to join a career pathway program, an applicant must be a student or recent graduate of one of the partnered universities and meet certain entrance requirements that vary from program to program. A survey of the pathway programs currently offered found a minimum entrance

requirement of freshman status with a Private Pilot Certificate (PSA Airlines, n.d.) and the highest entrance requirement being a senior or recent graduate of an accredited aviation program (Delta Air Lines, n.d.). After initial application screening, each candidate selected will then complete an interview and evaluation process similar to what is conducted during the traditional hiring process. If selected into a pathway program, the candidate will be offered a position with the company. The cadet will then complete their flight training, build a specified amount of flight experience, and proceed to the sponsoring company for employment. Many pathway programs are unpaid but offer regular engagement activities and mentorship while cadets are completing their training or experience (Lutte & Mills, 2019).

A Traditional Airline Pilot Career Path

Before understanding an airline pilot career path, it is important to be familiar with the structure of the airline industry in the United States. Regional airlines are companies that operate smaller airplanes (typically 100 seats or less) on contract for the major airlines (Regional Airline Association [RAA], n.d.). There are 27 regional airlines who serve five major airlines in the United States (AirlinePilotCentral.com, n.d.). Generally, major airlines are the desired career destination for pilots seeking airline employment given the higher pay, benefits, larger aircraft, more diverse route structures, which include international destinations, offered at the major airlines. As a result, regional airlines hire younger pilots with less flight experience than major airlines.

Prior to career pathway programs, a typical airline pilot career path would begin as they neared the minimum hour requirements for being hired by a regional airline. Depending upon hiring demand, a pilot would apply to one or more regional airlines once they met minimum hiring qualifications. Candidates who are selected are invited to interview at the airline and may

also be evaluated on their flight skills or systems knowledge. Successful candidates are hired at the regional airline and begin as a first officer where they will remain until they have the skill and experience necessary to make a captain position. Each airline follows their own seniority system for determining who is eligible to attain a captain position (Lutte, 2018a).

Once a pilot earns a position as captain and acquires a few years of operational experience as a captain, they are now competitive to be hired by a major airline. The experience requirements needed to become competitive will vary based on the hiring patterns and demand for pilots at the major airline level. Once a pilot considers themselves competitive, they begin the application process over again, applying to the major airlines that they desire to work with. The interview process is very similar at the major airline level as the regional airline level with the exception that the major airlines are far more competitive and require significant preparation on the part of the candidate. Successful candidates who are hired by the major airline will give up the seniority that they held at the regional airline.

Career Trajectory Through a Pathway Program

Although each pathway program varies slightly, there are considerable differences to the career trajectory for each participant. First, the pathway program can begin as early as the student's freshman year in college although most programs require students to be at least a junior in college to apply. A career pathway program is designed to provide a streamlined pathway for a collegiate aviation student to reach their ultimate career goal of working for a major airline. For this reason, a majority of career pathway programs begin in college and end at a major airline (Lutte & Mills, 2019).

A successful candidate who applies, interviews, and is selected into a pathway program will have an accelerated career path right to a major airline without having to apply or interview

again. One such career pathway offers, "pilots meeting the requirements of the Delta Propel program can progress through your chosen career route to Delta in 45 months or less" (Delta Air Lines, n.d.). Not only do these career paths accelerate the career progression but they also offer continual and progressive seniority throughout the process. A pathway program cadet will still be required to work at a regional airline, both as a first officer and as a captain, but they will do so while maintaining a seniority spot at the sponsoring major airline.

Overview of Current Pathway Programs

There are currently 18 career pathway programs offered at the University of North Dakota (UND Department of Aviation, n.d.). Some pathway programs lead to large air freight companies while others lead to regional airlines only. Each program has slightly different entrance requirements, benefits, and selection processes. From a broader perspective, there are over 175 different agreements between regional airlines and universities within the United States with major airlines having over 25 agreements with 15 universities (Lutte & Mills, 2019).

Conceptual Framework

Close connections between airlines and universities through pathway programs should create a much clearer pathway to a career as an airline pilot by creating milestones between college and a major airline. Furthermore, the high demand and quick pace of hiring provides a reasonably accurate timeline for achieving their career goal. Finally, the increased financial benefit that has come as a result of high demand for airline pilots has attracted more young people into the industry (Klapper & Ruff-Stahl, 2019). It is likely that collegiate aviation students will join a career pathway program at some point in their collegiate student life, given the streamlined career path that is offered with these programs. It is also likely that students will join these programs in their junior and senior years after they have had time to learn about each

program available to them. Students early in their education experience are likely to have little background to make a career decision upon whereas, students who reach the peak of their educational experience should be more familiar with the details of the industry before them and will be able to make a more informed and thoughtful decision about their career path. It is hypothesized that students will be increasingly likely to join a pathway program in their junior and senior years as their familiarity of each program increases. By supplementing this information with qualitative feedback regarding why a student chooses a particular pathway program, or what factors influence a student's choice in pathway programs will yield a more complete picture of student's perceptions. Additionally, qualitative feedback will yield more clarity regarding how to measure career pathway perceptions in future research, both quantitative and qualitative. Finally, it is hypothesized that students will have similar preferences when choosing a career pathway program as they have when choosing an airline to work for which was researched and reported in the first article of this report.

In summary, this research will compare demographic variables with three other variables: familiarity with career pathway programs, perceptions of career pathway programs, and intent to join a career pathway program. It is hypothesized that junior and senior students will have more familiarity with the career pathway programs available to them and have more intent to join a career pathway program than freshman and sophomore students.

The purpose of this study is to gain insights into collegiate aviation student perceptions of career pathway programs. This research will answer the following questions using a sample from a collegiate aviation program located in the midwestern United States:

1. How many collegiate aviation students have joined or intend to join a career pathway program?

2. How does student status relate with joining a career pathway program or familiarity with the different pathway programs?
3. What factors influence whether a pathway program is suitable to a student?

Method

In the spring of 2019, a survey was conducted under Institutional Review Board approval to ascertain collegiate aviation student's perceptions of the available career pathway programs. A voluntary, online survey administered through Qualtrics was used to conduct this research. Each participant confirmed their willingness to participate before initiating the survey. The survey received 298 responses from students of all class levels with many respondents answering both the quantitative and qualitative measures.

Participants

The final sample for this survey included 305 collegiate aviation students (41 female) ranging between 18 and 36 years of age (M = 20.9; SD = 2.52). The distribution of male to female respondents to this survey (13.44%) is indicative of the collegiate aviation population where this survey was conducted (13.58%). Both of these numbers are slightly higher than the industry average of approximately 5% of the airline pilot population being female (Lutte, 2019). In terms of student status, participants were evenly distributed between freshmen (23.2%), sophomore (19.5%), junior (25.8%), and senior (25.8%) status but recent graduates were a significantly smaller proportion of the sample (5.6%). Table 1 provides an overview of the descriptive statistics.

Table 1. Descriptive Statistics.

Measures	N	Mean (Mode)	SD	Minimum	Maximum	Skewness	Kurtosis
Demographic scale							
Status	302	2.71	1.24	1	5	.00	-1.16
Gender	305	1.13	0.34	1	2	2.13	2.56
Age	290	20.9	2.52	18	36	2.16	6.62
Career Path Familiarity							
Major Airlines							
Delta Propel	302	2.23(2)	.70	1	3	-.35	-.95
Jet Blue Gateway	301	1.44 (1)	.061	1	3	1.08	.10
Sun Country	302	1.61(1)	.66	1	3	.62	-.65
United Aviate	302	1.79(2)	.69	1	3	.29	-.90
FedEx Purple Rwy	301	1.62(1)	.69	1	3	.66	-.74
UPS	300	1.30(1)	.52	1	3	1.51	1.35
Regional Airlines							
Air Wisconsin	301	1.58(1)	.72	1	3	.81	-.69
Endeavor	303	1.93(2)	.75	1	3	.11	-1.24
Envoy	302	1.70(1/2)	.69	1	3	.47	-.86
ExpressJet	300	1.39(1)	.58	1	3	1.19	.40
Piedmont	302	1.33(1)	.53	1	3	1.28	.64
PlaneSense	300	1.13(1)	.37	1	3	2.73	7.03
PSA	302	1.49(1)	.67	1	3	1.02	-.18
Republic	303	1.72(1)	.77	1	3	.52	-1.13
SkyWest	301	2.18(3)	.77	1	3	-.32	-1.27
Pathway Programs							
In Pathway	301	1.69	0.46	1	2	-.81	-1.35
Intend One Path	277	1.53	0.81	1	3	1.06	-.67
Intend Multiple Paths	277	2.00	0.87	1	3	-.01	-1.68
Information Challenge	276	1.66	0.47	1	2	-.67	-1.56
Overwhelmed	278	1.61	0.49	1	2	-.44	-1.81
Accelerate Career	278	1.13	0.34	1	2	2.20	2.83

Research Design

This research involves the use of both quantitative and qualitative data collected from a survey sent out to measure student perceptions of career pathway programs. A convergent, mixed-methods design was used to compare the responses gained from both quantitative and qualitative survey data. The quantitative data was analyzed first to determine if participants were currently part of a pathway program, if they intended to join a pathway program, and finally how familiar participants were with each pathway program. In short, if a student is familiar with a particular career pathway program or if they have joined a career pathway program, they will

likely have more detailed information regarding why they chose to join a program. A grounded theory research method was followed for analyzing qualitative data with the responses to qualitative questions being coded using open coding methods (Creswell, 2014). From this process, a list of categories were created which related to the individual factors that influence a student's decision to join a career pathway program. Finally, the categorized data was compared with other quantitative measures within this dataset as well as previously collected datasets on career aspirations.

Measures

Collegiate aviation student perceptions of career pathway programs were measured with a new scale developed specifically for the present research. After seeking demographic information from the participant, the scale involved measuring student familiarity of each pathway program available to them on a 3-point scale (*Not familiar, Somewhat Familiar, Very Familiar).* A 3-point scale was used because of the large number of programs to rate (18), combined with the desire to keep this particular measure succinct in hopes of a higher completion rate for the qualitative response portion of the survey. In addition to the familiarity scale, the survey asked whether students have already joined a pathway program (*Yes* or *No*) and if they selected "Yes", they were asked to list the pathway program(s) that they had joined along with a qualitative response regarding why they chose a particular program. The survey then asked respondents whether they intended to join a pathway program (*Yes*, *No,* or *Undecided*). If the respondent indicated an intent to join a pathway program, a follow-up question was asked to rank first through third choice of program to join. Next, participants were asked if they found it challenging to gain information on pathway programs (*Yes* or *No*), if they felt overwhelmed by the pathway programs offered (*Yes* or *No*), and if they felt career pathway programs would

accelerate their career progression (*Yes* or *No*). Participants were then asked to rank their first, second, and third choice of career pathway program that they would like to join. Finally, participants were asked to provide qualitative responses on what influenced their decisions regarding pathway programs: *"*Why did you choose this particular pathway program?*"* and "What factors do you consider when determining whether a pathway program is suitable to you?" The last open-ended question asked respondents to provide any other information that they considered relevant to career pathway programs.

Following data collection, the qualitative responses were analyzed for significant common statements, which were then coded following open coding procedures. Next, these codes were analyzed further to identify key categories within the data. The identification of these categories was informed by previous research Daku & Stupnisky, 2017) that had measured categories relating to career preferences. Finally, patterns were identified based on these categories which were then compared with the quantitative data collected.

Results

Quantitative Measures

Of the 282 respondents who answered the question of whether they had already joined a career pathway program, 199 indicated that they had not yet joined a career pathway program. A chi-square test of independence was performed to examine the relation between student status and currently part of a career pathway program. The relation between these variables was significant, χ^2 (3, N = 282) = 61.02, p = <.01 with a large effect size of .47 Cramér's V (Cohen, 1988). Table 2 shows the breakdown of participants by status. Of the 260 respondents who answered the question of whether they intended to join a pathway program, 177 indicated that they were planning to join a pathway program. A chi-square test of independence measuring the

relationship between student status and intent to join a pathway program was not significant, χ^2 (6, N = 260) = 7.00, p = .32 . Despite group differences being non-existent, a majority of respondents indicated their intent to join a career pathway program, regardless of their current student status, a finding that points to the majority of students finding value in career pathway programs (Table 3).

Table 2. Summary of In Pathway Program.

Currently In Pathway Program	Freshman	Sophomore	Junior	Senior	Row Total
Yes					
n	8	11	15	49	83
Chi-Square Contribution	7.71	1.99	2.76	30.61	
Row %	9.64	13.25	18.07	59.04	29.43
No					
n	62	46	63	28	199
Chi-Square Contribution	3.22	.83	1.15	12.77	
Row %	31.16	23.12	31.66	14.07	70.57
Column Total	70	57	78	77	282
%	24.82	20.21	27.66	27.31	

Table 3. Summary of Intend One Pathway Program.

Intend One Pathway Program	Freshman	Sophomore	Junior	Senior	Row Total
Yes					
n	39	33	52	53	177
Chi-Square Contribution	.01	.01	.34	.57	
Row %	22.03	18.65	29.38	29.94	68.08
No					
n	6	5	6	9	26
Chi-Square Contribution	.01	.01	.34	.57	
Row %	23.08	19.23	23.08	34.62	10.0
Unsure					
n	17	14	18	8	57
Chi-Square Contribution	.85	.59	.11	3.52	
Row %	29.83	24.56	31.58	14.04	21.92
Column Total	62	52	76	70	260
%	23.85	20.00	29.23	26.92	

When asked if they intended to join multiple career pathway programs, 99 respondents indicated that they intended to do so, 58 did not intend to do so, and 103 were unsure. A chi-square test of independence measuring the relationship between student status and intent to join more than one pathway program was significant, χ^2 (6, N = 260) = 16.86, p < .01 with a medium effect size of .21 Cramér's V. As shown in Table 4, Senior students were more likely to join more than one pathway program and sophomore students were more unsure of whether they would join more than one pathway program.

Table 4. Summary Intent to Join More Than One Pathway Program.

Intend More Than One Pathway Program	Freshman	Sophomore	Junior	Senior	Row Total
Yes					
n	18	23	23	35	99
Chi-Square Contribution	1.33	.52	1.22	2.61	
Row %	18.18	23.32	23.32	35.35	38.08
No					
n	14	8	15	20	58
Chi-Square Contribution	.01	.58	.23	1.23	
Row %	24.14	15.52	25.86	34.48	22.31
Unsure					
n	30	20	38	15	103
Chi-Square Contribution	1.20	.02	2.07	5.85	
Row %	29.13	19.42	36.89	14.56	39.62
Column Total	62	52	76	70	260
%	23.85	20.00	29.23	26.92	

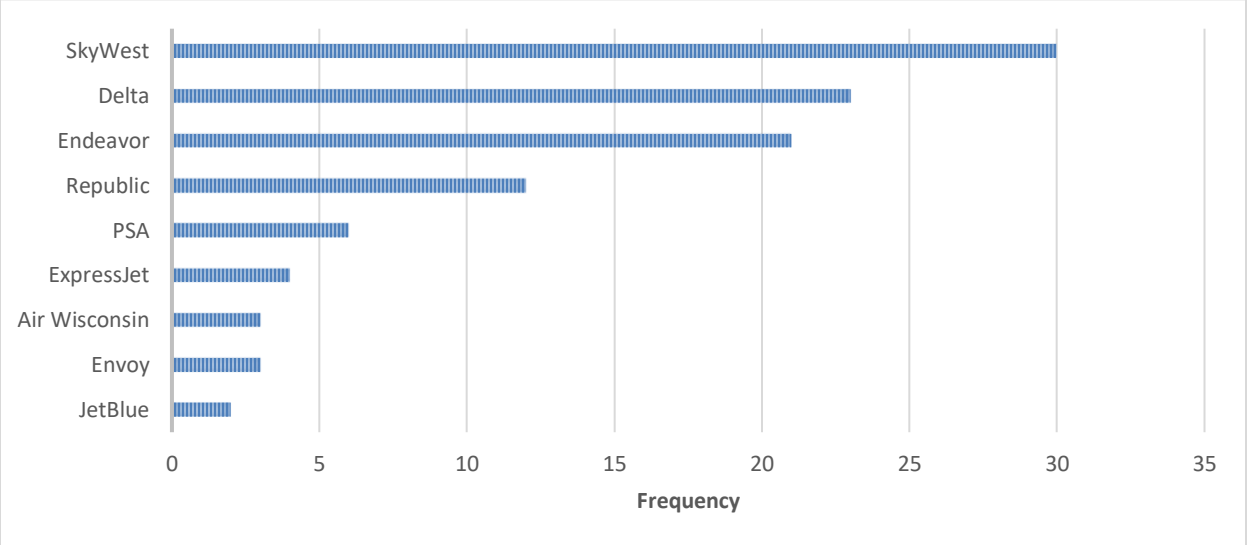
Analysis of the familiarity scales located a few particular pathway programs with a high level of familiarity. Of the 283 participants who indicated their level of familiarity with the Delta Propel program, 83.7% indicated they were somewhat or very familiar. A chi-square test of independence measuring the relation between student status and familiarity with the Delta Propel program was significant, χ^2 (6, N = 283) = 21.58, p < .01 with a medium effect size of .19 Cramér's V. Senior students were most familiar with the Delta Propel career pathway program.

The scale relating to the SkyWest pathway program also showed strong familiarity among the 282 respondents. 76.9% of respondents indicated they were somewhat or very familiar with the SkyWest pathway program. A chi-square test of independence measuring the relationship between student status and familiarity with the SkyWest pathway program was significant with a χ^2 (6, N = 282) = 23.56, p < .01 with a medium effect size of .21 Cramér's V. Senior students were most familiar with the SkyWest pathway program.

Qualitative Measures

For those respondents who indicated that they were currently in a pathway program a follow-up question was asked to determine which pathway program(s) they had joined. Responses were coded in R using the Corpus function. Results are shown in Figure 1. Of the 102 total responses received, the SkyWest and Delta Propel pathway programs were most frequently reported, followed by the Endeavor and Republic pathway programs.

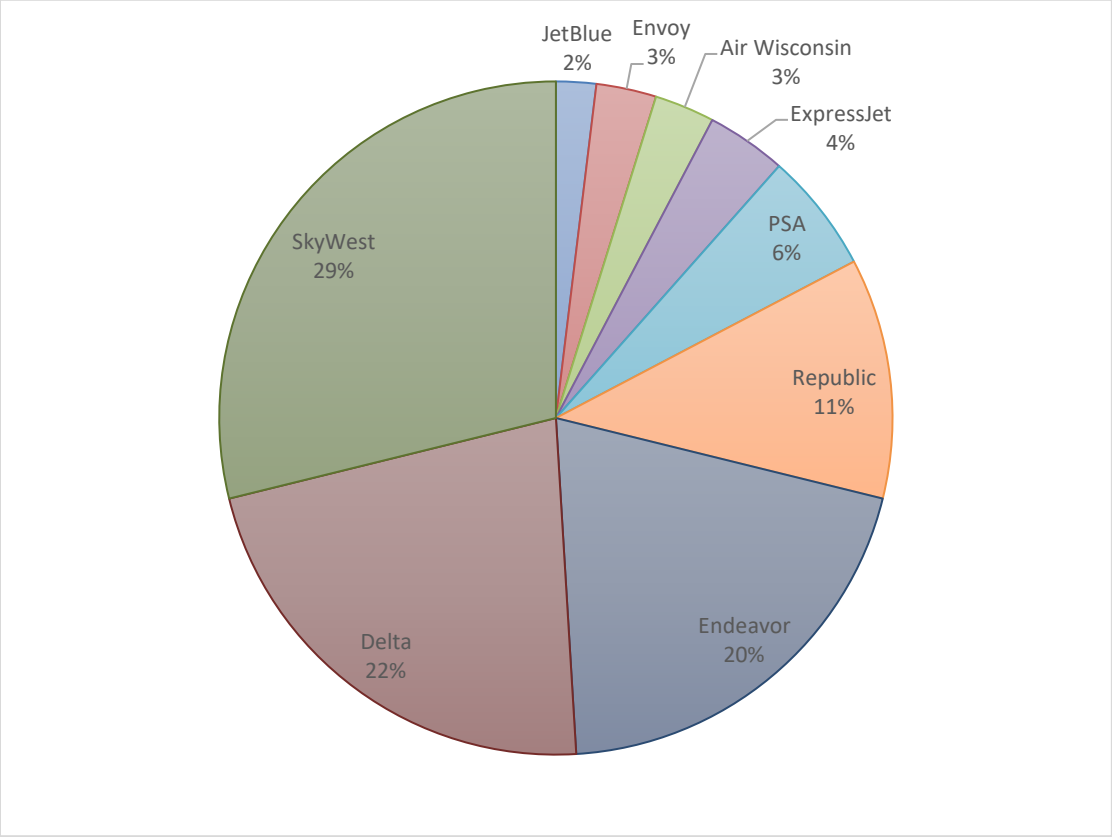
Figure 1. Pathway Currently Joined.



For those respondents who indicated that they intended to join one or more pathway program(s) in the future, a follow-up question was asked to determine the rank of first, second, and third choice of programs to join. Results are shown in Figure 2. Of the 218 respondents

who provided a first-choice career pathway program, Delta Propel and SkyWest were the most frequently selected. When results were split by student status, freshmen students had a similar proportion of first-choice responses with Delta Propel being the highest first choice pathway program and SkyWest being the next highest choice pathway. Among senior students, Delta Propel was the most selected first choice and SkyWest was the next most common first choice of pathway program.

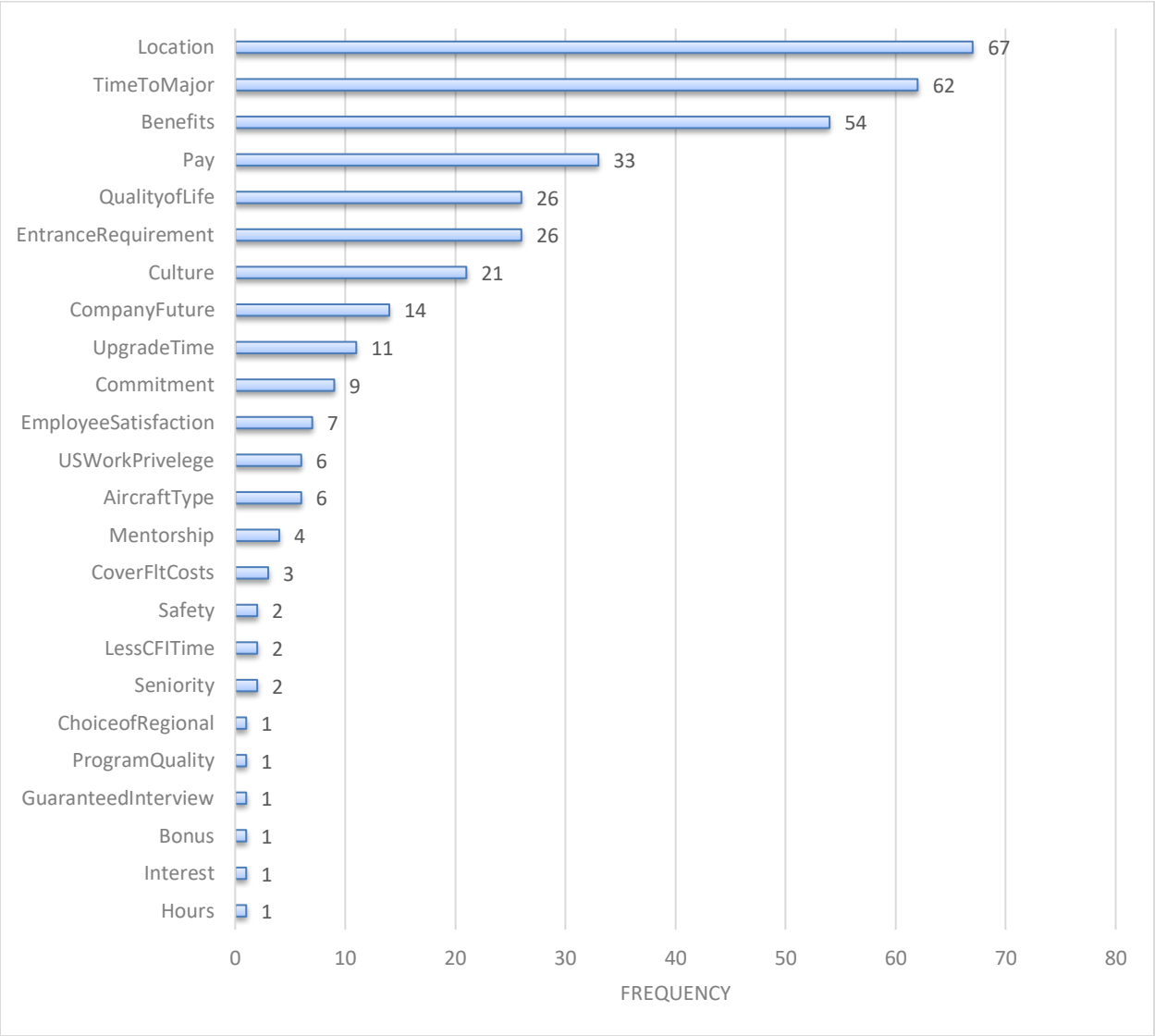
Figure 2. First Choice in Career Pathway Program



Of the 305 total respondents who answered questions to this survey, 207 provided qualitative response when asked what factors they consider when choosing a pathway program. There were 24 categories found after the analysis, coding, and categorizing process was complete (Creswell, 2014). Reponses by status was evenly distributed and the categories were also represented equally among the different levels of student status. The top four categories

were: location of company bases, time to reach a major airline, benefits, and pay. Figure 3 depicts the response rate of all 24 categories.

Figure 3. Why Choose a Pathway Program.



In reviewing the final survey question, which was an open-ended question asking for any additional information regarding pathway programs, there were a few common themes in the data. The first theme related to making pathway program information readily accessible to students using a webpage that presents all of the opportunities available on the University's website. Next, several respondents indicated value in the regular presentations that airlines

conducted to provide information on their particular pathway program and gave students a chance to meet people from the company. Finally, a theme relating to offering students benefits while they were still in school was prevalent among the data. Numerous responses listed travel benefits, compensation, and seniority with the company while still in school as a reason for selecting a pathway program. One poignant comment indicated a concern for what these career pathway programs would offer students if there was an economic downturn. This comment was raised by only two of the respondents but it is worth mentioning given the current pandemic.

Discussion

The purpose of this study was to gain insights into collegiate aviation student perceptions of career pathway programs. Over 70% of students who responded to this survey had yet to join a career pathway program. Regardless of student status, 68% of the students who had not yet joined a pathway program intended on joining at least one pathway program in the future. When asked whether they would join more than one pathway program, 38% indicated they planned on joining more than one while 39% were not sure. Of interest, senior-level students were more likely to join more than one pathway program. The qualitative responses highlighted why this might be. One comment that highlights this comes from a senior student who had indicated that they would join more than one pathway program; "My goal is to go to Delta and be able to travel west. Delta and SkyWest do both for those who have joined." (senior student). Many students also indicated a desire to select pathway programs that had specific locations. One particular response highlights this best although it was only one of several responses that indicated location as being a key factor in choosing a career pathway program; "My ultimate goal is to fly for Delta someday so I am very interested in the Endeavor and Delta Propel program, also because one of Delta's hubs is in Minneapolis where I would like to end up."

(junior student). Furthermore, students indicated a desire to speed up their career progression, a category of comments that was the second most common to location of company; "My number one consideration when choosing an airline is upgrade time. Specifically how long it will take until you qualify to actually go to the majors, from a regional." (senior student).

Not everyone had a positive perception of these programs. The following excerpt came from a senior student:

> While these pathway programs are nice to have, in the grand scheme of things, they all seem the same to me. I think these pathway programs may inadvertently lead some folks to think that the only way to a mainline carrier is through a regional pathway program, which is simply not the case. Another possible unintended consequence is that some of the younger pilots may develop the mindset that because times are so good, all they have to do to get hired at 'said major' is go to a regional, upgrade in a year and a half, get some TPIC time, and then they're good to go for the major."

This insightful quote shows that students do ponder the value of the pathway programs offered to them rather than completely accepting them at face-value. It is also clear from this comment that not all students find career pathway programs essential to realizing their career aspirations.

Overall, the vast majority of respondents perceive career pathway programs to be a positive aspect of their career. This is the case regardless of student status. Where differences between students of different levels becomes apparent is when asked about their familiarity with each of the programs available. Senior students were more familiar with the SkyWest and Delta Propel pathway programs as well as a few of the other regional airline programs. It is likely that this familiarity is a result of seeing multiple presentations by these companies over their time as a

student. This concept is highlighted by a senior student who provided the following comment:

> After seeing how a lot of them work, it seems the flows really don't accelerate your career, more so just lock you into one regional and skip interviews later, some simply space out interviews into a multiple year process. There are some that make life easier with interviews of offer career mentorships. Those are the best ones in my opinion.

This quote highlights student's concerns with committing to a particular airline too early in their career, a finding that came out of this research on several occasions.

Not all senior students have developed a positive impression of these programs as they have become more familiar, as is highlighted by the following comment from a sophomore student:

> Despite airlines advertising pathway programs as being non-binding, I feel it is very likely there would be negative implications on my reputation if I were to join even just one pathway program, but end up deciding against the program. I almost certainly do not know what the best career choice is for me even now as a senior within months from 1,000 hours. This is why I do not like pathway programs.

This particular quote highlights the concerns that students have joining one or more pathway programs. This quote also shows student's desires to have flexible career paths or options available to them. This comment also highlights to re-occurring theme of student's concern with committing to a particular organization too early in their career.

Results

It is important to highlight the primary themes that came out of the qualitative responses to what factors influence a student's decision to join a particular program. Location of bases,

time to get to a major airline, benefit packages (both while in the pathway program and once at the company), and pay were the most common items reported making up over 75% of the comments provided. It should also be noted that these responses align very closely with the findings of the first article in this report. Daku and Stupniski (2017) found that crew base, pay, and upgrade time were the most influential determinants of where a collegiate aviation student would choose to work.

Students generally perceive pathway programs to be a positive way to accelerate their career progress. This supports the literature which suggests that students desire a clearly defined career path (Lutte & Lovelace, 2016). Students are strongly influenced by where they would like to live once they reach their ultimate career goal but are also looking for airlines that offer appropriate compensation and benefits (Lutte, 2018b). Despite there being many pathway programs available, most students seemed confident that they knew enough about the programs available to make an informed decision on which pathway program to join. One participant suggested that a website be created which lists each of these programs along with basic information regarding each program. This change has already been implemented at the time of writing this report.

The Delta Propel and SkyWest pathway programs were the most popular among those who ranked the program that they would choose. For students who had already joined a pathway program, these two also had the highest number of cadets. This is likely due to the location of bases offered and how clearly and quickly these pathway program connected them to their ultimate career goal of working for Delta Air Lines. Again, this supports the literature which indicates a clearly defined pathway is useful in attracting students to a pathway program (Lutte & Lovelace, 2016) as well as the fact that crew base locations play an important role in attracting

students (Daku & Stupniski, 2017).

It is important for pathway programs to offer regular meetings and presentations throughout the school year (Lutte, 2016). It is also important to provide a continued connection during times of economic recession. This is also a challenge for many companies as the employees assigned to manage the career pathway programs are often re-assigned to other departments or let go from the company. The results of the present research highlight the value in maintaining some connection with the collegiate aviation student regardless of the demand or growth within the industry.

Implications

The findings of this research are valuable for both students and companies alike. With this information students can be more informed when making decisions regarding career pathway programs. Airlines that offer career pathway programs can use the results of this study to make appropriate adjustments to their programs. The findings of this research show the importance of being transparent with students regarding the commitment required of each program. Additionally, airlines would benefit from focusing their attention on junior and senior students as they are the most likely to be seriously considering whether to join a pathway program. Finally, students and airlines alike can rest assured that career pathway programs are widely considered as beneficial to the career progression of collegiate aviation students.

Conclusion

This research used a combined approach of both quantitative and qualitative collection in order to gain a detailed outline of the perceptions of collegiate aviation students on career pathway programs. Although there were valuable insights gained during this research, there are many more topics that have been identified to inform future research. A study of student

perceptions of these programs during an economic recession would highlight the value that students place on these programs and may highlight some of the weaknesses of these programs in appealing to student's needs. Additionally, with the themes gained during the qualitative research, a more detailed and effective quantitative measure can be developed in order to measure latent constructs relating to this topic. Finally, further research will be necessary to determine whether the perceptions of the population sampled for this research are the same for those students attending other institutions around the United States.

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Conclusion

After reviewing the purpose of this program of research, "to gain insight into how collegiate aviation students form and achieve their career goals", some progress has been made toward this end. Although much can and will be learned in this area, the research outlined in this report has provided some insights on how career aspirations are formed and influenced. In researching this topic from the perspective of motivation styles, military career aspirations, and career pathway programs, a few common threads can be found to inform future research on this topic.

There are many career opportunities available for students to choose. In order to attract future employers, industries will need to consider what motivates the present generation to choose one way or another. Often, a hiring or marketing department seeks to motivate candidates in the same way they themselves were once motivated – basing current practice on past experience. What does an aviation career offer the current generation of students and how can airlines and the military align their hiring programs to meet the needs of the next generation of pilots?

The generation of student researched during each of these studies is very influenced by the quality of life of their career. The participants of the present program of research are seeking careers that align with personal values; being close to family and friends or having time to spend on travel and leisure. A comment from the final article of this report resonates clearly.

> Pathway programs aren't necessarily going to be the deciding factor of why I choose an airline, I'm sort of set on Delta (I will share a cockpit with my dad if I have any choice in the matter), but instead pathway programs offer a great benefit of accelerated hiring and fast progression. My regional choice won't be based on

> the pathway programs offered, but on the standard things like quality of life, choice of bases, upgrade time etc. I have every intention of participating in pathway programs but it's not going to decide what regional I end up at, signing bonuses be damned.

In the face of all of opportunities offered, quality of life, location of bases, and family motivate the present generation of student.

The next steps regarding this program of research is to ascertain the influence of an economic recession and subsequent hiring slowdown on collegiate aviation student motivation and career aspirations. The data collected for the present research came during a prolonged period of growth within the aviation industry. It would be valuable to compare this data with data collected during a time of prolonged economic recession and slow hiring within the airline industry. Furthermore, there has been a significant increase in the literature surrounding careers in military aviation, including new initiatives on behalf of the military to attract more young cadets. Future research in this area could determine whether the recent initiatives have made an impact on the number of young people joining the military. Finally, given that career pathway programs have only been used heavily over the past few year, it would be valuable to continue measuring student perceptions of these programs to determine whether students still have the same perceptions or whether these perceptions have changed as the programs have matured. It would also be valuable to reach out to pathway program participants who are now working in the industry to determine whether their perceptions of these programs have changed as they progress in their careers.