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Female Airline Transport Pilots: The Role of Mentoring

Paul Cline

FEMALE AIRLINE TRANSPORT PILOTS: THE ROLE OF MENTORING

By

Paul E. Cline
Diploma, Presbyterian/St. Luke's School of Nursing, 1986
Bachelor of Arts, University of North Dakota, 2005
Master of Science, University of North Dakota, 2012

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This dissertation, submitted by Paul E. Cline in partial fulfillment of the requirements for the Degree of Doctor of Philosophy from the University of North Dakota, has been read by the Faculty Advisory Committee under whom the work has been done and is hereby approved.

Chairperson – Dr. Kimberly Kenville

Dr. Elizabeth Bjerke

Dr. Warren Jensen

Dr. Marcus Weaver-Hightower

Dr. Daphne Pedersen

This dissertation meets the standards for appearance, conforms to the style and format requirements of the Graduate School of the University of North Dakota, and is hereby approved.

Dean of the School of Graduate Studies

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Anything is possible if you simply refuse to quit.

ABSTRACT

Women have been a part of aviation since its inception, yet they have been traditionally underrepresented in the ranks of commercial pilots. This study explored what role mentoring played in the lives and careers of female Airline Transport Pilots (ATP). Participants completed a modified version of the Mentor Role Instrument (MRI) developed by Ragins and McFarlin.

It was determined that there was no statistically significant difference between female ATP who had been mentored and those who had not. Of the female ATP who had been mentored, those who reported an informal mentoring relationship rated their relationship higher than those who reported a formal mentoring relationship when it came to career oriented assistance and advice. The results for mentoring factors related to psychosocial needs and activities are less certain, but the preponderance of evidence supports the assertion that those female ATP who reported an informal mentoring relationship were more satisfied in these areas than their formal mentor counterparts.

CHAPTER 1

INTRODUCTION

JM is a commercial pilot for a well-known corporate flight department. During her career she has amassed over 20,000 total flight hours; the vast majority of which are in turbine engine (jet) aircraft. When JM was a junior in High School, she went to see her guidance counselor about college. When the female counselor asked what JM wanted to be she replied, "A pilot." The counselor laughed.

Even though these events occurred over thirty years ago, JM can still remember the shame she felt at her counselor's response. As a result she spent her freshman year in college studying computer programing, a topic she enjoyed but had no passion for.

Fortunately, a friend took JM to meet with a professor from the flight department who dispelled her myths and set her on the road to professional success. JM's story is not unique. Aviation is gendered almost entirely male, and the idea of a woman on the flight deck remains strange for many people; even today.

Statement of the Problem

Women are grossly underrepresented in aviation. Women comprise only 5.12% of all commercial airline pilots in the United States (Goyer, 2016). "Today, 4.1 percent of airline transport pilots (ATPs) are women, 2.7 percent are black or African American, 2.5 percent are Asian and 5 percent are Hispanic or Latino" (Zirulnik, 2014). Despite over a century of industry involvement by women, the "field of aviation and other technical occupations has remained somewhat immune to the changing gender roles" (Germain, Ronan Herzog, & Rafferty Hamilton, 2012, p. 436).

This gender gap has long-term consequences for aviation. Because of unprecedented growth in global markets, and the aging of the baby boomer generation, Giovanni Bisignani, Director General and CEO of the International Air Transport Association, predicts "the world's airlines may need as many as 17,000 new pilots per year to keep pace with growth and the number of pilots hitting retirement age" (Michels, 2007 n.p). The implications are obvious: it will be very difficult to meet the future demands of the aviation industry without a greater representation of women.

Statement of Purpose

One possible intervention to increase the number of women in aviation is mentoring. This research explored what role mentoring played in the lives of female ATP. The benefits of a positive mentoring relationship have been well documented (Allen, Eby, O'Brien, & Lentz, 2008; Kram, 1985; Ragins, 2012; Ragins & Cotton, 1999; Scandura, 1998). They include more promotions, higher wages, greater job satisfaction, and an increased sense of confidence and well-being by the protégé. Mentoring has also been shown to increase recruitment and retention among underrepresented populations in traditionally male dominated industries (Johnson & Andersen, 2010; Leavey, 2016).

Background

Women have played an active role in aviation from the very beginning. Katherine Wright, sister of Orville and Wilbur Wright, helped finance "man's" first flight (Luedtke, 2011, p. 2). Without her financial backing, it is doubtful the Wright Brothers would have been the first to achieve powered, heavier than air flight.

Blanche Stuart Scott became the first woman in the United States to solo an aircraft in 1910 (Freydberg, 1998). On April 16, 1912, Harriet Quimby, "the first American woman to hold

a pilot's license," climbed into the flight deck of a fifty-horsepower monoplane and flew across the English Channel (Jaros, 1993, p. 15). Bessie Coleman became the first African American of either sex to receive an International Pilot's License in 1922. She toured the country giving performances until her death while preparing for an airshow in 1928 (Creasman, 1997).

The late 1920s and 1930s were defined by Amelia Earhart. She embodied "what women were trying to prove by their flying: flying is safe and women make good pilots" (Luedtke, 2011, p. 5). She was the first woman to fly across the Atlantic Ocean (1928) and the first president of the "Ninety Nines," an organization of female pilots that advanced the cause of women in aviation. The disappearance of Earhart and her navigator in 1937 continues to capture the public's imagination eighty years later.

In 1932 Ruth Nichols became the first woman hired as a pilot for commercial passenger flights. She flew for New York Airways, a feat that would not be repeated until 1973 (NASA, 2014).

During World War II over 1000 women served in the Women Airforce Service Pilots (WASP), ferrying aircraft, towing targets, and providing flight instruction. Thirty Eight of these women made the ultimate sacrifice (Luedtke, 2011). Following World War II, Jackie Cochran, the driving force behind the WASP's, became the first woman to break the sound barrier on May 20, 1953. Chuck Yeager, the first man to break the sound barrier, followed Cochran in the chase plane (Gant, 2016). Cochran was not finished. In 1961 she set two world altitude records in the T38 (NASA, 2014).

Also in 1961, A group of women aviators, known as the Mercury 13, "underwent and passed the same physical and psychological exams that were given to the Mercury 7 male astronauts." Unfortunately none were chosen to participate in the program. NASA was afraid

that an accident resulting in the death of a female astronaut would lead to such a public outcry that it could derail the space program (DOT, 2016).

In 1964 Jerrie Moch became the first woman to fly around the world. She completed the 22,860 mile trip in 29 days flying a single engine Cessna 180 (Gant, 2016; NASA, 2014). In 1973 Emily Howell and Bonnie Tiburzi became the first female pilots for a major airline flying jet engine passenger aircraft (NASA, 2014).

These accomplishments all occurred against a backdrop of undisguised hostility towards women aviators. Since its inception, aviation has been viewed as a man's world. Despite their sister's financial backing, the Wright brothers refused to train women (Jaros, 1993). Similarly, Glenn Curtis had to be bribed to take Blanche Stuart Scott as his first and only female student. Believing women were unfit for flight, Curtis modified Scott's aircraft to make it un-flyable, restricting her to ground runs and taxi tests. Not to be deterred, and with the help of a Curtis mechanic, Scott removed the modifications and on September 2, 1910, "managed to fly to an altitude of 12 meters (40 feet) in the air" (Cochrine & Ramirez, 2016).

Even though Curtis did not believe women were physically or mentally suited to be pilots, he was not above using their novelty to sell his products. In the 1920s and 1930s, aviation was in a period of transition. Air travel had been proven to be safe and reliable, yet the public remained skeptical. Even though they were fascinated with airplanes, many people simply refused to fly. "'Nothing impresses the safety of aviation on the public quite so much as to see a woman flying an airplane,' observed Bendix Trophy (Air Racing's biggest prize) winner Louise Thaden. If a woman can handle it, 'the public thinks it must be duck soup for men'" (Corn, 1979, p. 559). This undisguised misogyny was the morass early women pilots had to navigate in order fly professionally.

The story of Bessie Coleman provides another, even more disturbing example of institutionalized animosity. Born in Texas during the waning days of the nineteenth century, Elizabeth "Bessie" Coleman had to overcome three distinct disadvantages in order to realize her dream of flying: she was poor, she was a person of color, and she was a woman. The daughter of illiterate sharecroppers and the children of slaves, Bessie began work at a very early age to help support her family. The small one room school house in the rural Texas town where she grew up only went to the eighth grade, but Bessie persevered and graduated from High School, something almost unheard of for an African American woman in the Jim Crow South (Creasman, 1997).

Bessie developed a fascination with aviation after listening to her brother describe the exploits of early aviators over the battlefields of Europe. "Dishearteningly, she was not allowed to enroll in a aviation school in the United States. The Jim Crow segregated schools only catered to white men and a few white women claiming, 'there was no room for black birds in the sky over America'" (Creasman, 1997, p. 159).

In 1920 Bessie Coleman met Robert S. Abbot, a prominent newspaper publisher in Chicago. With the help of Abbot and several other wealthy philanthropists, Coleman went to France in 1921 to learn to fly, "In 1922, Bessie Coleman earned her international pilot's license and became the first African-American pilot in the world and the first American granted an international license" (Creasman, 1997, p. 159).

Bessie Coleman was more than a ground breaking female aviator, she was also a tireless advocate for social justice. Given the segregated nature of the Jim Crow South, it was common practice for white and African American customers to enter through separate gates at any public gathering. Bessie Coleman rejected this practice and would only perform her airshow routine if

all customers were allowed to enter through the same gate. It is a testament to her commercial appeal that organizers throughout Texas complied with her demands (Creasman, 1997).

Gender norms are neither accidental nor biological (Hinojosa, 2010). Gender beliefs and biases are used to enhance and propagate the status quo. They are a form of social control. In 1930s America, male hegemony remained the norm. Nowhere is this more evident than in the history of the Women's Airforce Service Pilots (WASP). In the late 1930s, as the United States and Europe ran headlong towards another world war, pilot shortages were acute. Yet, despite the critical need, the idea of women pilots contributing to the war effort was rejected out of hand. Even with powerful supporters such as Air Force Chief of Staff General Henry "Hap" Arnold, and First Lady Eleanor Roosevelt, denizens of the status quo prevailed. Among the ideas' many detractors were "the heads of various commands as well as hide-bound civilian bureaucrats whose built in prejudices and endless objections ranged from outright contempt, to nitpicking minor adjustments concerning hours, age, and experience in certain horsepower ratings" (Mizrahi, 2001, p. 41).

In the middle of this volatile mixture of military necessity and social conservatism was Jaqueline Cochran, an aviator who in the late 1930s held more flying records than any living human being, male or female (Mizrahi,2001). To demonstrate the utility of using women pilots to ferry aircraft, and thereby freeing up male aviators for combat duty, Cochran offered to fly one of the Lockheed Hudson bombers across the Atlantic to England. Before being allowed to undertake the mission, Cochran had to undergo a flight test in the aircraft. She was "subjected to what amounts to a humiliating inquisition by an instructor pilot who has no use for women in the cockpit. Cochran quickly disabused him of this attitude, greasing all eight touch and go landings before being granted permission to fly the Hudson across the ocean" (Mizrahi, 2001, p. 42). In

England Cochran met with a cadre of female British pilots who were used to ferry aircraft for the Royal Air Force (RAF). It was this meeting that helped solidify her ideas for a similar program in the U.S.

In June of 1941 the Air Corp become the Army Air Force, complete with its own staff. The need for pilots during this time was crushing, and predicted to get worse. Ferry Command was ordered to expand seven fold to meet the needs of Lend Lease and the general mobilization beginning to happen in the U.S. General Arnold asked Jackie Cochran how many women pilots could be brought into the war effort. Of the 3000 women pilots on rolls of the Civil Aviation Authority in 1941, less than 100 would qualify as ferry pilots. In addition to using those pilots who were already qualified, Cochran proposed a complete training system, along military lines, to help meet the staggering need (Merryman, 1998).

Cochran's initial plans were rejected, due in no small part to Cochran's dominating personality, and the continued belief that women did not belong on the flight deck (Mizrahi, 2001, p. 51). "The existence of a military unit populated entirely by female pilots ran counter to popular assumptions regarding the capabilities and limitations of women, and the presence of women as pilots of military planes questioned assumptions of masculinity. Because of this, efforts by the Army Air Forces to militarize the WASPs met fierce resistance" (Merryman, 1998, p. 4).

After the United States entered World War II in December, 1941, the preexisting pilot shortage became a matter of national security. "Brand new planes were piling up at the factories. Runways were so crowded, and male delivery pilots so overworked, that there was no place to store the overflow. Unless something was done to supply new pilots, and soon, the delivery pipeline would shut itself down, strangled by its own prodigious output" (Mizrahi, 2001, p. 53).

The WASP program under Cochran's leadership officially began in June, 1942. However, they were not members of the Army Air Force, they were a civilian auxiliary, the only auxiliary from any service not militarized. Furthermore, the problems that had plagued the concept since the beginning did not disappear once it was legitimized. In many ways they intensified (Cornelsen, 2005; Merryman, 1998).

At Love Field in Dallas, Texas, the commanding officer was officially reprimanded for the unfair treatment the female aviators received at the base (Cornelsen, 2005). Likewise,

> The WASP encountered more discrimination by far at Camp Davis in North Carolina than at other bases. When the women arrived, the base commander, Major Stephenson, told them pointedly that both they and the planes were expendable. His obvious dislike for women in the military was usually imitated by the men under his command … The WASP were routinely assigned inferior planes that were later found to have been improperly maintained. There were suspected incidents of sabotage at Camp Davis, and two women died while on duty there. At one WASP crash site, Jackie Cochran found traces of sugar in the engine, but opted to avoid an investigation for fear that a scandal would ensue that could end the WASP program (Cornelsen, 2005, p. 114).

While there may have been many reasons for the animosity the WASPs faced, the idea that aviation is a decidedly masculine undertaking cannot be overstated. Aviation has always been gendered almost entirely male. If a woman can do it, it is by definition no longer a man's job. "By taking on roles and missions previously associated with the masculine, WASPs challenged assumptions of male supremacy in wartime culture" (Merryman, 1998, pp. 2–3).

The belief that flying is the domain of men dogged female aviators following the war. Commercial air travel skyrocketed following World War II, yet the only female crewmembers were flight attendants. It was not until the 1970s and 1980s that women began to enter the ranks of commercial pilots in any appreciable numbers (Luedtke, 2011).

Women were not allowed to fly military aircraft until 1974. Even then the prohibition against women flying combat aircraft remained in place. The last major regulatory barrier facing women pilots came down when President Clinton signed Public Law 102-190 in 1991. This law repealed the statutes prohibiting women from flying combat aircraft and serving on combatant ships. In spite of the misgivings of hard line exclusionists, the United States military was steadily moving towards a more inclusive posture. As with earlier attempts to integrate women into combat arms, this move was met with ridicule and scorn (Sagawa & Campbell, 1992).

The military is the prototypical male – masculine – institution (Bristor & Fischer, 1993; Sagawa & Campbell, 1992; Weber, 1995; Wechsler-Segal, 1995). As such, it has consciously defined itself by repudiating all things female. In keeping with this misogynistic outlook, not only is masculinity defined in opposition to femininity, but that which is masculine must subordinate that which is feminine (Stein, 2005).

Even though legislative barriers have been removed in both civilian and military life, there remain vestiges of the old order. While these will disappear with time, they remain powerful influences on not only aviation, but society as a whole.

Despite a long history of institutionalized misogyny, women aviators have endured and prospered. That said, their continued underrepresentation poses a potential problem for the industry. One possible way to address the underrepresentation of women in aviation is mentoring. In both formal and naturally occurring relationships, mentoring has been shown to

attract and retain underrepresented populations (Johnson & Andersen, 2010; Leavey, 2016). This research was conducted to ascertain if this is true for female ATP.

Research Questions and Methodology

This study uses a cross sectional survey design to examine the role mentoring has played in the lives of female ATP. In order to explore whether or not mentoring has played a role in the lives of female ATP, this author has chosen to use the Mentor Role Instrument (MRI) developed by professors Ragins & McFarlin, (1990). This instrument measures ten key functions or roles associated with mentoring as defined by Kram, (1985). It uses an expanded 100 point Likert Scale ranging from zero (strongly disagree) to 100 (strongly agree) and each of the ten characteristics are assessed using three questions.

Using demographic about the participants and responses from the MRI, this researcher will answer the following research questions:

Research Question Number One:

Is there a difference in self-reported perceptions of success between female Airline Transport Pilots who report having been mentored and those who have not?

Research Question Number Two:

Is there a difference in self-reported perceptions of success between female Airline Transport Pilots who report having been involved in a formal mentoring relationship compared to those who report being involved in an informal mentoring relationship?

Research Question Number Three:

Is there a difference in the amount of career oriented assistance, as measured by the Mentor Role Instrument, given to female Airline Transport Pilots who report having an

informal mentoring relationship compared to those who report a formal mentoring relationship?

Research Question Number Four:

Is there a difference in the amount of psychosocial support, as measured by the Mentor Role Instrument, given to female Airline Transport Pilots who report having an informal mentoring relationship compared to those who report a formal mentoring relationship?

Summary

The reason women remain underrepresented in aviation despite changing legal and cultural norms is multifaceted and complex. Aviation has always been a male dominated endeavor.

One possible intervention to increase recruitment and retention of women in aviation is mentoring. This research examined what role mentoring has played in the lives of female ATP.

CHAPTER II

LITERATURE REVIEW

The term mentor comes from Greek mythology. In Homer's Odyssey, Mentor was the servant of King Odysseus who was entrusted with the education of his son, Telemachus, when Odysseus left to fight the Trojan War. "Mentor was described as providing both wise and sensitive counsel to the son to groom him to become king" (Russell & Adams, 1997, p. 1).

Today, the term mentoring "implies a relationship between a young adult and an older, more experienced adult that helps the younger individual learn to navigate in the adult world and the world of work. A mentor supports, guides, and counsels the young adult as he or she accomplishes this important task" (Kram, 1985, p. 2). The purpose of this literature review is to provide the theoretical framework and background information necessary to place this study in context. In short, does being part of a mentoring relationship improve a woman aviator's self-confidence and feelings of success?

Theoretical Framework

Kathy E. Kram is a Professor Emeritus at the Questrom School of Business at Boston University. Her 1985 book, "Mentoring at Work: Developmental Relationships in Organizational Life," is considered one of the groundbreaking studies on the topic of mentoring in the workplace (Lentz & Allen, 2009; Ragins, 2012; Ragins & Cotton, 1999; Scandura, 1998). Her original work forms the basis for much of the research that has followed.

Kram, (1985) divides the mentoring relationship into four distinct phases: Initiation, Cultivation, Separation, and Redefinition.

> During initiation, the mentor and protégé select one another, and initial interactions involve learning the other's style and working habits. During

> the cultivation phase, career and psycho-social mentoring functions peak and learning accrues to both mentor and protégé. Protégés gain valuable knowledge from the mentor, and mentors gain the loyalty and support of the junior person, as well as a sense of well-being from being able to pass on knowledge to the next generation of managers. During the separation phase, the relationship ends, often due to geographical separation. Finally, the redefinition phase is often marked by the mentor and protégé relationship, becoming more like a peer friendship (Scandura, 1998).

Levinson, Darrow, Klein, Levinson, & McKee (1974) describe the progression of the relationship this way

> In the usual course, a young man initially experiences himself as a novice or apprentice to a more advanced, expert, and authoritative adult. As the relationship evolves, he gains a fuller sense of his own authority and his capability for autonomous and responsible action. The young man increasingly has the experience of "I am" as an adult, and the relationship becomes more mutual" (p. 99)

Career Development

Kram (1985) identified two main areas mentors intervene for their charges: career development and psychosocial support. Under this model, each of these categories can be further subdivided into distinct behaviors. Career development functions are those that "help protégés learn the ropes and facilitate the protégé's advancement in the organization" (Ragins & Cotton, 1999, p. 530). Behaviors associated with career development include:

1. **Sponsorship**, or providing growth opportunities for the protégé. It is important to not confuse this important mentoring function with a free ride. The mentor may open the door, but it is the protégé's responsibility to prove themselves (Adams, 1997).
2. **Coaching, teaching and guiding**. The mentor instructs the protégé in specific skills needed to succeed within the organization as well as some of the organization's "unwritten rules" so that the protégé may avoid embarrassment later.
3. **Increased exposure and visibility with the organization**. Closely related to sponsorship, the mentor insures the protégé sees and is seen by decision makers within the organization. By doing so the protégé becomes known as an individual.
4. **Protection**. The mentor acts as a buffer between the organization and the protégé. In doing so the mentor creates an "environment where the protégé can make mistakes without losing self-confidence. This important aspect makes it easier for the protégé to make decisions when faced with uncertainty" (Adams, 1997, p. 6).
5. **Providing challenging assignments**. Closely related to sponsorship and exposure, the mentor provides opportunities for the protégé to succeed in challenging and beneficial assignments. These successes are then brought to the attention of decision makers within the organization.

Psychosocial Support

Psychosocial support are those behaviors that address interpersonal aspects of the mentoring relationship and "enhance the protégé's sense of competence, self-efficacy, and professional and personal development" (Ragins & Cotton, 1999, p. 530). Unlike career development functions, psychosocial support does not rely on the mentor's position within the organization. Rather, it is dependent upon the quality of the interpersonal relationship between mentor and protégé. Behaviors associated with psychosocial support include:

1. **Acceptance and Confirmation**. The mentor helps the protégé develop their professional self.
2. **Counseling**. The mentor assists with problem solving and acts like a sounding board for the protégé. The mentor provides a safe place to express ideas and frustrations while receiving concrete advice and options.
3. **Friendship**. Giving respect and support.
4. **Role Modeling**. The mentor acts as a guide, someone who the protégé can emulate while they are forming their own sense of their professional self.

The Mentoring Relationship

Mentoring functions "differentiate developmental relationships from other work relationships" (Kram, 1985, p. 22). Career functions assist the protégé to advance within the organizational hierarchy. "Career functions are possible because of the senior person's experience, organizational rank, and influence in the organization … [it is the mentor's position] that enables him or her to provide sponsorship, coaching, and exposure and visibility to help a junior colleague navigate effectively in the organizational world" (Kram, 1985, p. 23).

In contrast, psychosocial support is not position dependent. Rather it relies upon a "relationship that fosters mutual trust and increasing intimacy" (Kram, 1985, p. 23). The quality of this relationship allows the protégé to identify with the mentor and "find a model who the younger would like to become" (Kram, 1985, p. 23). Psychosocial support "enhances an individual's sense of competence, identity, and effectiveness in a professional role" (Kram, 1985, p. 32).

As Johnson and Ridley (2008) put it, "In mentorship, where the stakes are high and the pressure to succeed is intense, there can be no shortage of affirmation. If you could do only one thing as a mentor, affirm your protégés … Affirmation is an artful blending of personal acceptance and professional endorsement. When mentors affirm their protégés, they communicate an unequivocal belief in the protégé (p. 11, 12).

Both functions are important for the protégé's advancement. "Mentoring scholars have also discovered that different mentoring functions predict different protégé outcomes: Career functions are a stronger predictor of protégés' compensation and advancement, while psychosocial functions have a stronger relationship with protégés' satisfaction with the relationship. However, both career and psychosocial functions predict protégés' job and career satisfaction" (Ragins & Kram, 2008, p. 4).

Formal vs Informal Mentoring

Mentoring relationships also tend to fall into two broad categories: formal and informal. Formal mentoring relationships are developed within the context of the organization and require organizational support and intervention. One third of the nation's major companies have some form of a formal mentoring program (Ragins & Cotton, 1999). Conversely, informal mentoring

relationships develop spontaneously. Although they occur within the context of the organization, they are not sponsored or supported by the administration (Ragins, 2012).

Formal Mentoring

There are several key differences between formal and informal mentoring relationships. Formal mentoring relationships are assigned by a program coordinator and the participants often do not meet until the match has been made. Many formal mentoring relationships are contractual, with a specific set of goals and prearranged meeting times agreed upon at the outset. These relationships last between six months and one year and the termination is often preprogrammed into the relationship (Lentz & Allen, 2009; Ragins & Cotton, 1999).

Feldman (1999) and Ragins and Cotton (1999) agree that for mentoring to be most effective, mentors and protégés should share not only work interests but deep bonds of liking and trust as well.

> However, it is almost impossible for firms to determine a priori which potential mentors and protégés would best be suited to each other in terms of needs, temperament, and personal style. Organizations cannot, by fiat, dictate trust and liking among colleagues … [stressing that] these deeper relationships take much longer to develop and consequently cannot be 'managed' in a top-down, 'timely' fashion (Feldman, 1999, p. 251).

Johnson and Ridley (2008) concur. Successful mentors are vigilant and discerning of the traits, talents, and interests of their junior personnel and careful to embark on mentorships only with those who match them well. The investment should pay dividends for both mentor and protégé" (p. 3). Since in formal programs perfect strangers may be paired with little communication about the matching process, "Finding a mentor in a formal program may be like

trying to find true love on a blind date—it can happen, but the odds are against it" (Johnson & Andersen, 2010, p. 117).

Much of the available research on formal mentoring relationships deals with the perceptions and outcomes of the protégé (Kalbfleisch, 2002; Lentz & Allen, 2009; Levinson et al., 1974; Ragins, 2012; Ragins & Cotton, 1999). In response, an interesting body of knowledge is being developed that deals with the effect of the formal mentoring relationship on the mentor, not just the protégé. Chun, Sosik, and Yun (2012) report that enhanced transformational leadership behaviors and a heightened sense of well-being were two positive outcomes for mentors in formal mentoring relationships. Similarly, Lentz and Allen (2009) found "mentoring others was associated with more favorable job attitudes," as well as increased retention among mentors (p. 359). Along these same lines, (T.D. Allen, Lentz, & Day, 2006) found that individuals with mentoring experience report higher current salary, greater rate of promotion, and higher perceptions of career success than individuals with no experience as a mentor.

Informal Mentoring

Because informal mentoring relationships develop organically, they are often more free form with less structured meeting arrangements and goals that evolve over time. Informal relationships last longer than formal ones, three to five years on average, and often terminate when one person is transferred or leaves the organization. Informal relationships are also more concerned (at least initially) with the psychosocial aspects of the relationship. The mentor and protégé may develop a parent-child type relationship from which both benefit. For the mentor, an informal relationship may develop because he/she views their charge as a younger version of themselves and gain a sense of wellbeing from giving back to the future generation (Ragins & Cotton, 1999).

Informal mentoring relationships avoid many of the pitfalls of their more formalized counterparts since the relationship begins naturally. The parties sought each other out. They were not assigned. The importance of this dynamic cannot be overstated. In a military study involving 691 retired Navy flag officers (Admiral), "67% reported having at least one salient mentor during their careers as officers, and most had had at least three important mentors. In most cases, the mentorships formed due to the mentors' initiative or through mutual interest" (Johnson & Andersen, 2010, p. 115); it is the organic genesis of these relationships, not their organizational context which makes them memorable.

In a 2016 article in Naval Aviation News dedicated to honoring female naval aviators, a series of vignettes proved not only how essential mentoring was to these Sailor's careers, but in each one the relationships they remember the most were informal in nature. Rear Admiral CJ Jayne's story is typical, "Within the first few weeks of arriving at my first duty station, Training Squadron (VT) 86 in Pensacola, I met Lt. Frank Smith … he quickly became my mentor and go to person for all things Navy … Throughout my career, Frank continued to provide guidance and is still my sounding board today" ("Forming a more perfect union: Honoring women in naval aviation," 2016, p. 16).

Given these facts, it is not surprising that members of informal mentoring relationships report a higher degree of satisfaction as well as enjoying greater upward mobility and financial rewards than those who experienced only formal mentoring relationships (Kram, 1985; Ragins, 2012; Ragins & Cotton, 1999; Scandura, 1998).

High Quality Mentoring Relationship

In contrast to middle of the road or toxic relationships, high quality mentoring relationships add a third, relational component to the two functions of mentoring outlined above. In doing so it changes the definition of the relationship. A high quality mentoring relationship is one that is an "interdependent and generative developmental relationship that promotes mutual growth, learning, and development within the career context" (Ragins, 2012, p. 519).

In a traditional mentoring relationship there is a distinct power gradient between the mentor and protégé. It is a relationship where knowledge and assistance are given and loyalty and respect are returned. "Traditional perspectives on mentoring view it as a hierarchical, one way relationship in which the mentor serves as a 'godfather' in helping the protégé career" (Ragins, 2012, p. 521). The traditional mentoring paradigm explains the average or marginally effective relationship; it does not explain the high quality relationship.

In a high quality relational mentoring relationship, the relationship provides "different functions based on the needs of their members, which are continually evolving … the continuum of mentoring quality therefore reflects not only the differences across relationships but also within them." According to Ragins (2012), a high quality relational mentoring relationship emphasizes:

1. Mutuality and reciprocity inherent in growth producing relationships. Both members enter the relationship expecting to grow, learn, and be changed
2. Diverse mentoring relationships. Different memberships associated with power (race, ethnicity, sexual orientation, LGBT, disability). It is a platform for both people to learn and grow.

3. Communal norms: Individuals give to their partners on the basis of need, not on the basis of expected returns. Traditional mentoring relationships are often concerned with a transactional framework that values the relationship for what it can do. Communal norms emphasize giving without expectation of a return.
4. Relational mentoring is holistic. Attention is paid to the interaction between work and non-work. The relationship is such that it may affect the quality of life both inside and outside of the job.

Relational mentoring relationships also expand the number of independent variables used to measure the effectiveness of the relationship. Relational mentoring is concerned with "dependent variables that reflect personal growth and development, as well as acquisition of relational skills and competencies that may be transportable across work roles and organizational boundaries." The take home message from high quality relationally based mentoring relationships is that if you use only monetary compensation or number of promotions to measure the effectiveness of the relationship, you may decide the mentoring failed when in fact it was vital (Ragins, 2012, p. 522). These relational functions include, but are not limited to:

1. Personal learning and growth. This can be both a process and an outcome. Both members of the dyad may serve as teacher, in high quality relational mentoring relationships expertise is fluid and situationally dependent. The mentor may give insights into the workings of the organization while the protégé brings the mentor up to speed on the latest technology.
2. Inspiration. This is defined as an "evoked psychological state derived from an episode with an object, event, or person" (Ragins, 2012, p. 527). In a high quality mentoring relationship, both parties may see different and better possibilities that then energize and

direct behavior. There is a difference between being inspired "by" and being inspired "to." Being inspired "to" requires action. You are motivated to do something.

3. Affirmation of ideal, best, and authentic selves. Our sense of self is formed through our relationship with others. Our Ideal Self is the self we wish to become in the future. It encompasses our hopes, dreams, aspirations, and accomplishments. Partners play a key role in keeping each other focused on achieving their ideal self. Our Best Self refers to the characteristics an individual displays when they are on their best behavior. In a high quality mentoring relationship your partner encourages and holds you accountable for acting your best. Our Authentic Self is our "true or real self" (Ragins, 2012, p. 530). Our authentic self includes not only our best self, but our worst traits, characteristics, and attributes. A high quality mentoring relationship makes room for the authentic self.
4. Reliance on communal norms. Communal norms shift the focus from ourselves to our partners. "The focus is on the partner's well-being and benefits are given in response to the partner's needs without expecting repayment" (Ragins, 2012, p. 530). Communal relationships may be strong or weak. Strong relationships feel a responsibility for the well-being of their partner, while this sense is denuded in weaker communal relationships.
5. Shared influences and mutual respect. This refers to the process by which members of the dyad are influenced by each other. Mutuality is the norm. Influence is based on who is the subject expert, not the hierarchical position. Each member of the group empowers the other.
6. Relational trust and commitment. "A psychological state comprising the intention to accept vulnerability based upon positive expectations of the intentions or behavior of

another" (Ragins, 2012, p. 531). Trust comes from the relationship itself. It has an affective foundation and is based on emotional bonds. Trust is affected not only by the length of the relationship, but the frequency and intensity of the interactions. For this reason trust and commitment are more often seen in informal mentoring relationships than their formal, structured counterparts.

"Since mentoring relationships can range from close personal relationships to formally assigned relationships that embody a contractual relationship, it is reasonable to expect that high quality mentoring relationships are more likely to rely on communal rather than exchange norms, and that the stronger the communal norm, the higher quality of the relationship" (Ragins, 2012, p. 530).

Special Considerations

Age

The aging of our society, along with the "demise of the linear career path" (Finkelstein, Allen, & Rhoton, 2003, p. 250) implies that people will have not only multiple jobs, but multiple careers, during their lifetime. This has severe implications for mentoring. "With more and more individuals changing careers or launching careers at midlife, we can expect to see more developmental relationships where the less experienced "junior" member is older than his or her mentor" (Kram, 1985, p. 5). In a study that set out to explore this phenomenon, Finkelstein et al. (2003) found that older protégés received less career counseling than younger protégés.

> The finding that older protégés report less of this behavior in their relationships may indicate that mentors of older protégés did not see these individuals as having potential for development or advancement. An older person in the role of protégé may appear as not being at a typical or

> appropriate stage of career development, which could lead to this perception of lower potential (p. 273).

These findings are congruent with earlier research cited by the authors, most notably Whitely, Dougherty, and Dreher (1992). That said, there is another possibility. Older protégés who have changed careers may or may not need the type of career advice normally provided by an older, more seasoned mentor. They are familiar with the workings of large organizations and do not need assistance with such mundane tasks as preparing a resume or standards of corporate dress. "The idea that different forms of mentoring may be more or less needed by individuals at different career and life stages is an interesting topic for future research" (Finkelstein et al., 2003, p. 274).

Cross Gender Mentoring

> Are women really from Venus and men from Mars (Gray, 1992)? Some people think so. If women speak and hear a language of connection and intimacy, while men speak and hear a language of status and independence, then communication between men and women can be like cross cultural communication, prey to a clash of conversation styles. Instead of different dialects, it has been said they would speak different genderlects (Tanner, 1990, p. 42)

Despite the benefits that many experience through mentoring, cross gender mentoring relationships raise additional concerns that are usually not found in same sex mentorships. "To reduce uncertainty, ambiguity, and anxiety … individuals rely on what is familiar. In mentoring relationships where the women is the mentor and the man is a protégé, men and women's styles exist. Whereby many women are inclined to do what is asked of them, many men are inclined to resist" suggestions, especially from a woman (Feist-Price, 1994, p. 14).

(Kram, 1985) devotes an entire chapter in her highly influential study to the problems faced by those engaged in cross gender mentoring relationships. She believes many of the problems stem from early socialization.

> Men, for example, worked effectively in teams with other boys and young men in sporting events. In their adolescent and early adult years, they learned to relate to women as girlfriends, lovers, or secretaries who occupied lesser status positions. None of these experiences prepare them to work with women and peers or supervisors … Similarly, women historically have had little training in team sports and more experience in solo sports … in terms of relationships with potential mentors, women had had socialization experiences that leave them inclined to behave in dependent and non-assertive ways with male colleagues. In addition, they are unlikely to have had any experiences that would prepare them to assume positions of authority and to provide mentoring functions to others, particularly to men (Kram, 1985, p. 106).

While a feminist critique of her assertions is beyond the scope of this review, certain allowances must be made for the dated nature of this material and the blindingly heteronormative bias it exemplifies. In the thirty years since this study was published, several important watersheds have occurred which have drastically altered the occupational landscape. In 1985, there were no women who held CEO positions in Fortune 500 companies (Fairchild, 2014). Today, there are 22 female CEO of Fortune 500 companies. While this is statistically a trivial number, 4.4%, the economic power it represents is staggering. "According to Fortune, these 22 women command businesses that contribute to two-thirds of the country's GDP" (Ryals, 2016, p.

20). In 1985 women were excluded from any assignment that may include combat, including piloting combat aircraft or serving aboard combat vessels. Since 1992 women have been allowed to pilot combat aircraft and serve on board warships, both on the surface and as members of submarine crews. At the time of this writing, four women in the military have achieved the highest rank possible during peacetime: General and Admiral (4 stars). In March 2016 Air Force General Lori Robinson was named as Commander of US Northern Command, "which will make Robinson the first female commander of a combatant command in history" (Locker, 2016). While there is little doubt that much work remains, it is also fair to say the gender roles prevalent when Kram wrote this are beginning to change in meaningful ways.

In her 1985 study Kram identified five major areas where cross gendered mentoring may cause "complexities" in the relationship:

Stereotypical Gender Roles: Men and women are inclined to assume "stereotypical roles in relating to each other in work settings." These socially mediated gender roles are deep seated and difficult to overcome. "These roles tend to constrain behavior and to reduce individual competence and effectiveness … People perpetuate stereotypical roles because it is what they know. In developmental relationships, the challenge is to figure out how men and women can be freer to behave in a variety of ways that are more appropriate for a given work context" (Kram, 1985, p. 106).

Given the influence of gender training on our lives, it should not be surprising to see that in their research regarding gender and mentoring functions, Allen and Eby (2004) found

> Mentors reported providing more psychosocial mentoring to female protégés than to male protégés, but no differences in career mentoring were observed. Perhaps mentors feel more comfortable providing the functions

> associated with psychosocial mentoring to women. Or perhaps because of gender norms, mentors feel compelled to provide greater psychosocial mentoring to women because they believe that women need (or want) the friendship and affirmation aspects of mentoring to a greater degree than do men (p. 136).

Role Models: the role modeling function is frequently unsatisfactory for both the mentor and protégé. Given the gender role constraints outlined above, this is not surprising. "While women in the early career years face developmental dilemmas, similar to those of male counterparts, women face some that are unique to being female in a male-dominated organizational context" (Kram, 1985, p. 107). It is also important to remember that with the changing demographics of the modern workforce, females mentoring male protégés is becoming more common. This raises several interesting questions. Beyond male intransigence about accepting female leadership, there is the problem of how the male protégé is to act. The female mentor will be fulfilling her role according to acceptable standards of female behavior within the organization or profession. Like the young woman who is at a loss for how to act in the Boardroom because she is the only woman present, a male protégé must also determine how he is to act given his mentor is the opposite sex. Because of this, "diversified relations are perceived to provide *fewer* role modeling functions than homogeneous relationships because role modeling in diversified relations may be attenuated due to non-overlapping social identities stemming from membership in dissimilar gender groups (Sosik & Godshalk, 2000, p. 116).

Increasing Intimacy and Sexual Tension: Mentoring relationships are by definition deeper and more complex than other work type relationships. This increased intimacy can affect the relationship in several ways. "Workplaces are social centers and approximately one-third of

all social relationships begin at work. Sexuality in organizations can take many forms, including psychological intimacy, sexual attraction between two people, sexual innuendoes and sexual harassment" (Hurley & Fagenson-Eland, 1996, p. 42). The specter of sexual harassment makes this type of relationship, especially when it exists between an older male who is in management with a younger female employee, ripe for exploitation. "Because it is common for a sexual liaison to occur (or be suspected) between a senior man and a junior woman, both men and women may hesitate to enter into these relationships"(O'Neill & Blake-Beard, 2002, p. 55).

> Sexual involvement, real or perceived, can produce anxiety and confusion in both the internal relationship between the mentor and protégé as well as in the external relationship between the mentoring dyad and the rest of the organization … even the possibility of unfounded rumors may deter people from becoming involved in cross-sex mentoring relationships (O'Neill & Blake-Beard, 2002, p. 54).

Public Scrutiny: The first three categories outlined above deal with the interpersonal relationship between the mentor and protégé. The final two categories of complexities deal with how the mentoring dyad interface with the organization as a whole. "Cross gender developmental relationships are subject to public scrutiny; others study the relationship with interest and, more likely, with some suspicion" (Kram, 1985, p. 107). The long tradition of a more senior male being romantically involved with a junior female have in many ways forever tainted these relationships. Additionally, modern awareness of sexual harassment and abuse in the workplace also make these relationships potentially dangerous. "The possibilities of sexual involvement and favoritism rather than competence as the criterion for sponsorship can threaten the reputations of both individuals" (Kram, 1985, p. 108).

Peer Resentment: A final area of complexity is peer resentment. According to Kram (1985) this occurs when a female protégé is associated with a powerful male mentor in a male dominated industry or organization. "Because of the competitive dynamics that occur among peers aspiring to advance, the solo woman stands out as one who receives special attention if she is regularly coached by a male superior. Although the relationship may be important for her, she may be reluctant to maintain it for fear of becoming isolated from her peers" (p. 108). The acute shortage of female mentors in many industries and the "perception by both genders that men hold more and different forms of power to advance the protégés' career" only exacerbates this problem (Sosik & Godshalk, 2000, p. 115).

Mentoring in the Military

As an institution, the U.S. military believes in mentoring. The U.S. Army's Field Manual now contains a special section on the "development and effective conduct of mentorships with subordinates" and the Chief of Naval Operations has declared that "mentoring sailors should be a preeminent focus of the Navy … In the last three years alone, formal mentoring programs and online e-mentoring matching services have proliferated within the armed forces" (Johnson & Andersen, 2010, p. 113).

Mentoring has a long history in the U.S. military. One prominent example of the effects of mentoring can be seen in the life of General of the Army (5 Stars), and later Secretary of State George C. Marshall. In a career that spanned two world wars, Marshall is credited with guiding and influencing several of World War II's greatest generals, including Joseph Stillwell, Omar Bradley, Mark Clark, and Dwight Eisenhower. "Prior to that, Marshall benefited from mentoring relationships as a mentee to Brigadier General Hunter Liggett in 1915, General

Franklin Bell in 1916, and General "Blackjack" Pershing in 1916" (McGuire, 2007, p. 24). Likewise,

> In 1972 Colin Powell, a young bright Army officer, was interviewed and hired by Carlucci as a White House Fellow. As a result of that relationship, Powell became a rising star, serving as Carlucci's deputy on the National Security Council, and later, succeeding him as national security adviser to President Reagan. Upon his promotion to Four-Star general, Powell became the youngest member to serve as Chairman of the Joint Chiefs of Staff (Adams, 1997, p. 8).

This emphasis on mentoring is evident in several studies. In one study of 568 midshipmen at the Unites States Naval Academy (USNA), Baker, Hocevar, & Johnson (2003) found that 45% of those studied reported having a significant mentoring relationship while at the Academy. In this study the authors found a statistically significant relationship between the gender of the cadet and the likelihood of being mentored, with 63% of females and only 42% of males reported being involved in a mentoring relationship. Similarly, when asked to rate the importance of these relationships, the female cadets viewed the relationship as being significantly more important. Although there was no correlation between the mentoring relationship and academic standing, protégés of either sex were more satisfied with their education and much more likely to mentor others.

Likewise, a large survey of mentoring in the Army (N=3715) found that 84% of senior Non Commissioned Officers and Commissioned Officers reported having at least one significant mentoring relationship during their career (Johnson & Andersen, 2010). This is consistent with the findings of McGuire (2007) who conducted a study of 206 Senior Military Officers (SMO)

attending the National War College. The results from this study showed 91% of respondents had been mentored during their military career and 87% had in turn mentored others.

What is instructive about military mentorships is those the service members rate as most beneficial, tended to be informal in nature and origin. This is consistent with the civilian studies detailed above. Even though the military is awash with formal mentoring programs (Johnson & Andersen, 2010; McGuire, 2007) informal mentoring relationships remain the most impactful.

This sentiment is seconded by Johnson & Andersen (2010) who argue that there is no empirical evidence that the plethora of formal Department of Defense mentoring programs are effective. "In spite of the fact that U.S. military commands have instituted broad and sweeping requirements for mentoring, … a careful review of the literature reveals not a single published evaluation of the efficacy of formal military mentoring" (p. 117). This has led many to view mentoring as the latest "fad" to come down the line and discount its usefulness (Johnson & Andersen, 2010; McGuire, 2007).

Mentoring at Scheduled Air Carriers

Two domestic airline crashes during the first decade of the twenty-first century convinced the U.S. Congress that something must be done to improve not only pilot training, but the support they received after being hired. On October 14, 2004 Pinnacle Airlines Flight 3701 crashed into a residential area about 2.5 miles south of Jefferson City Memorial Airport, Jefferson City, Missouri, killing the pilot and co-pilot. No one on the ground was injured.

The aircraft was on a repositioning flight between Little Rock, Arkansas, and Minneapolis/St. Paul, Minnesota. During the flight both engines "flamed out" after a pilot-induced aerodynamic stall and were unable to be restarted. The National Transportation Safety Board (NTSB) found the probable cause of the accident to be "(1) the pilots' unprofessional

behavior, deviation from standard operating procedures, and poor airmanship, which resulted in an in-flight emergency from which they were unable to recover, in part because of the pilots' inadequate training; (2) the pilots' failure to prepare for an emergency landing in a timely manner, including communicating with air traffic controllers immediately after the emergency about the loss of both engines and the availability of landing sites; and (3) the pilots' improper management of the double engine failure checklist" (National Transportation Safety Board, 2007, p. 1).

Colgan Air Flight 3407 crashed on approach to Buffalo-Niagara International Airport, Buffalo, New York on February 12, 2009. Two pilots, two flight attendants, and 45 passengers were killed. One person on the ground also died.

The NTSB found that "the probable cause of this accident was the captain's inappropriate response to the activation of the stick shaker, which led to an aerodynamic stall from which the airplane did not recover. Contributing to the accident were (1) the flight crew's failure to monitor airspeed in relation to the rising position of the low speed cue, (2) the flight crew's failure to adhere to sterile cockpit procedures, (3) the captain's failure to effectively manage the flight, and (4) Colgan Air's inadequate procedures for airspeed selection and management during approaches in icing conditions" (National Transportation Safety Board, 2010, p. x).

In both crashes airmanship, leadership, professionalism, and the failure to follow established guidelines were cited as contributing factors. In response, The Airline Safety and Federal Aviation Administration Extension Act of 2010 (Public Law 111–216) was passed by both Chambers and signed into law by President Obama on August 1, 2010.

This law instructed the Federal Aviation Administration (FAA) to "convene an Aviation Rulemaking Committee (ARC) to develop procedures for each Part 121 air carrier pertaining to

mentoring, professional development, and leadership and command training for pilots serving in Part 121 operations and to issue a … final rule based on the ARC recommendations" (Department of Transportation & Federal Aviation Administration, 2016, p. 69909).

A formal, regulated mentorship program involving professional pilots working for scheduled airlines (CFR 14, Part 121) is now in the rule making process. A Notice of Proposed Rule Making (NPRM) was issued on October 7, 2016 and closes for comment on January 5, 2017. The NPRM states that each Part 121 carrier must "provide new-hire pilots with an opportunity to observe flight operations (operations familiarization) to become familiar with procedures before serving as a flight crew member in operations; revise the upgrade curriculum; provide leadership and command and mentoring training for all pilots in command (PICs); and establish Pilot Professional Development Committees (PPDC)" (Department of Transportation & Federal Aviation Administration, 2016, p. 69908).

The proposed FAA rule spans forty pages and includes a detailed list of topics to be covered during training. It also repeatedly stresses the need for mentoring of line pilots, especially those who are upgrading to the rank of Captain. What the rule does not do is define what form this mentoring is to take. It leaves that up to the individual air carrier.

Summary

As shown above, mentoring is much more than a simple pairing between coworkers. It is a multifaceted relationship that can influence both party's career and personal life. When effective, the mentoring relationship has positive benefits for both people. When destructive, both the mentor and protégé can pay a steep price in terms of lost productivity, career advancement, and damage to their reputation.

Mentoring relationships are also evolving. As societally mediated gender roles change, women are taking a more dominant role in the workforce. This increases the number of female role models and mentors available to young women in the early stages of their career while also setting the stage for more cross gender mentoring relationships where the woman is the mentor and the man is the protégé, disabusing the idea that in relationships of power, the man is always supreme.

Mentoring can be effective tool for both personal and professional growth. The literature indicates that mentoring relationships are most effective when they develop organically, but that does not mean formal mentoring programs are without merit. Any relationship that improves communication between levels of an organization has value.

CHAPTER III

METHODOLOGY

This study uses a cross sectional survey design to examine the role mentoring has played in the lives of female ATP. This chapter addresses the key elements of the methodology used to conduct the study, including the survey instrument, participant population, data collection, data preparation and data analysis.

A cross sectional survey design, also known as a snapshot, is a design where the researcher gathers data at one point in time. These surveys are the mainstay of research efforts in the social sciences. Although it is not possible to prove causation using this method, their appeal lies in their ability to provide descriptive information regarding the target audience as well as provide a limited amount of generalizability to the larger population (Carlin & Hocking, 1999; Creswell, 2005).

Mentor Role Instrument

To answer the research questions outlined above, this researcher has chosen to use the Mentor Role Instrument (MRI) developed by professors Ragins & McFarlin, (1990). "The questionnaire assesse[s] perceptions of career development (sponsorship, coaching, protection, challenging assignments, and exposure) and psychosocial (friendship, role modeling, counseling, and acceptance) mentor roles" as well as the perception of the mentor as parent as described by Kram, (1985) in her original research (Ragins & McFarlin, 1990, p. 326).

The MRI was validated using confirmatory factor analysis. "This model orthogonalized the mentor role constructs, thus allowing for a purer assessment of the relationship between a given item and the mentor role it was designed to measure. The t values were used to select the top three items from each of the role subscales" (Ragins & McFarlin, 1990, p. 327).

Professor Ragins along with several colleagues has published no less than five individual studies using either the complete or selected parts of the MRI (Ragins, 2012, 2015; Ragins & Cotton, 1999; Ragins, Cotton, & Miller, 2000; Ragins & Kram, 2008). It has also been used by other researchers.

In their exploration of mentor functions among women soccer coaches in the National Collegiate Athletic Association (NCAA), Narcotta, Petersen, & Johnson, (2009) used the MRI to determine which functions were most prevalent in coaching/athlete dyads. What made this study particularly helpful was the author's thoroughness in conducting their own tests of internal reliability utilizing Chronbach's Alpha. "In this scenario a reliability coefficient greater than or equal to 0.70 is needed for sufficient reliability … The Cronbach's Alpha for both career-related functions and psychosocial functions in this study also demonstrated high reliability estimates of 0.955 and 0.942, respectively" (Narcotta et al., 2009, p. 107). This effort reaffirmed the validity of the MRI.

In an ingenious and heart rendering use of the MRI, (Onuoha, Munakata, Serumaga-Zake, Nyonyintono, & Bogere, 2009) used the instrument to determine what effect organic (informal) mentoring had on the psychosocial wellbeing of children orphaned by AIDS in Uganda and South Africa. Their work clearly showed that even though these AIDS orphans scored lower than all other groups in mental wellbeing, a strong organic mentoring relationship helped to ameliorate the effects of their loss.

The MRI as developed by Ragins and McFarlin is a respected and validated tool for assessing the ten mentoring functions outlined by Kram during her original research. Dr. Ragins has made the instrument available for use by other researchers in the hopes of expanding the

body of knowledge in this very important area of scholarship. The complete survey, including demographic questions that are not part of the original MRI can be found in Appendix A.

Participants

Participants were all female aviators who hold a Airline Transport Pilot (ATP) certificate from the Federal Aviation Administration (FAA), or the international equivalent issued by the International Civil Aeronautics Organization (ICAO). The ATP is the "FAA's highest certificate and includes training in: aerodynamics, automation, adverse weather conditions, air carrier operations, transport airplane performance, professionalism, and leadership and development" (Federal Aviation Administration, 2013). Under 14 CFR 61.159 "Aeronautical experience: Airplane category rating" an ATP must:

1. Be 23 years' old
2. Hold a Commercial Pilot Certificate with an Instrument Rating
3. Complete an ATP Certification Program
4. Pass an ATP knowledge and practical test
5. Have at least 1500 hours of total time

The ATP certificate is required by law to act as either the Pilot in Command (PIC) or Second In Command (SIC) on a commercial air carrier authorized under 14 CFR Part 121 (*14 CFR Part 121, Subpart M-Airman and Crewmember* Requirements). Part 121 air carriers are more commonly known as commercial or regional airlines. They provide scheduled service within the National Airspace System (NAS).

The ATP was chosen as the entry point for this study because those who have achieved this milestone have established themselves in their career and are among the upper eschelons of the profession. Since the total population we are dealing with is small – out of the approximately

157,000 ATP in the FAA database as of December 31, 2015, 6,554 or roughly 4.1% are female (FAA, 2016) – attmempts to contact these women is, by necessity, very focused. "The International Society of Women Airline Pilots," a selective group of female aviators who must be CFR Part 121 pilots and hold an ATP to join, posted our announcement on their website and social media. The University of North Dakota Alumni Association also sent out an email to over 1100 female alumni asking for their participation.

Data Collection

Data collection occurred between November 1, 2016 and December 28, 2016. Data was collected via the University of North Dakota Qualtrics© online survey tool. A unique URL was generated for this study and was included in the information asking for participation.

Once a subject accesses the website, the first screen explaines the purpose of the study as well as giving a brief definition for the mentoring relationship. The subject is then asked to confirm that they are a female aviator who holds an ATP or ICAO equivalent. If the participant answers yes, they continue on to the Institutional Review Board (IRB) consent information and demographics section of the survey. If the participant answers no, they are taken to the final screen of the survey thanking them for their time. In this way only those who self report as being eligible to participate in the research study are allowed to continue.

Following the demographics portion of the survey, each respondent is asked to answer the question "How successful do you view yourself in your profession?" using a 100 point Likert Scale. Following this question are several more demographic questions relating to their industry experience.

The final decision point is a question regarding mentoring: "Are you currently or have you ever been in a mentoring relationship?" Those that answer affirmatively are taken to the

Mentor Role Instrument to complete the survey. Those that answer no are redirected to the final screen of the survey thanking them for their time and efforts.

In total the survey is designed to only take fifteen to twenty minutes to complete. The survey and all procedures were reviewed and approved by the University of North Dakota Institutional Review Board (IRB). As per IRB guidelines, no identifying information was gathered. All responses were completely anonymous.

Assumptions and Limitations

The following assumptions were made regarding the data used in this study:

1. Those women that completed the survey made every effort to be truthful and complete in their answers. In order to encourage honesty and protect the participant's privacy, no identifying information was gathered. All responses were completely annonymous.
2. The participants were female aviators who possessed an ATP certificate or international equivalent as evidenced by their self report.

The following limitations are acknowledged:

1. Limited sample size. Participants came primarily from the membership roles of the International Society of Women Airline Pilots and UND Alumni mailing lists. A broader sample of female ATP would be adventitious.
2. Narrow focus. Female ATPs were chosen to highlight and isolate professional women pilots from other women involved in aviation. It was not mean to imply that female air traffic controllers, airport managers, astronauts, military pilots, educators, dispatchers, human resource specialists, or corporate flight department managers are not successful or do not play a vital role in the aerospace industry.

3. Narrow window to collect data. The survey instrument was available online for 58 days. A longer window may have garnered more responses.
4. Electronic data collection. The survey was conducted entirely online. People without access to email, social media, or the ISWAP's website were not given the opportunity to participate.

Data Preparation and Analysis

The data was downloaded from Qualtrics© to IBM's Statistical Package for Social Sciences (SPSS©) statistics software Version 24 for analysis. The first task was to remove from the dataset all of the participants who had answered no to the first question. There were 247 unique responses to the survey. 189 of the respondants answered "yes I am a female aviator who holds or in the past held an ATP or Restricted ATP Certificate or international equivalent." 55 replied in the negative.

The next step was to remove those responses which were completely blank or had greater than 50% of the responses blank. After cleaning the data there were a total of 158 subjects who met the inclusion criteria

Following data preparation, descriptive statistics were run on three main groups: those who did not have a mentor during their career, and those who reported having either a formal or informal mentoring relationship. An ANOVA between these three groups was conducted using the question "How successful do you view yourself in your profession? Zero (not successful) to 100 (very successful)" as the dependent variable.

This data will be used to answer Research Questions One and Two: "Is there a difference in self-reported perceptions of success between female Airline Transport Pilots who report having been mentored and those who have not?" and "Is there a difference in self-reported

perceptions of success between female Airline Transport Pilots who report having been involved in a formal mentoring relationship compared to those who report being involved in an informal mentoring relationship?"

The remainder of the statistical testing was concentrated on the mentored group. Initially all thirty of the MRI items were compared between the two mentoring groups using an Independent Sample T Test. Results were noted and can be found in Appendix B.

The next step involved using Ragins & McFarlin's (1990) initial ten mentoring functions. New variables were created using each of the categories and their associated questions, and Independent Sample T Tests run to look for significance between the formal and informal mentor groups.

The results from these tests were used to answer Research Questions Number Three and Four: "Is there a difference in the amount of career oriented assistance, as measured by the Mentor Role Instrument, given to female Airline Transport Pilots who report having an informal mentoring relationship compared to those who report a formal mentoring relationship?" and "Is there a difference in the amount of psychosocial support, as measured by the Mentor Role Instrument, given to female Airline Transport Pilots who report having an informal mentoring relationship compared to those who report a formal mentoring relationship?"

Table 1 Mentor Role Instrument (MRI) from Ragin & McFarlin
New variables by category

Mentor Functions	Question
	My Mentor …
Sponsor	Helps me obtain desired positon (Q18) Uses his/her influence to support my advancement in the organization (Q19) Uses his/her influence in the organization for my benefit (Q22)

Coach	Helps me learn about other parts of the organization (Q23) Gives me advice on how to attain recognition in the organization (Q24) Suggests specific strategies for achieving career aspirations (Q25)
Protect	Protects me from those who may be out to get me (Q26) "Runs interference" for me in the organization (Q27) Shields me from damaging contact with important people in the organization (Q28)
Challenge	Gives me tasks that require me to learn new skills (Q29) Provides me with challenging assignments (Q30) Assigns me tasks that push me into developing new skills (Q31)
Exposure	Helps me be more visible in the organization (Q32) Creates opportunities for me to impress important people in the organization (Q33) Brings my accomplishments to the attention of important people in the organization (Q34)
Friendship	Is someone I can confide in (Q35) Provides support and encouragement (Q36) Is someone I can trust (Q50)
Parent	Is like a father/mother to me (Q38) Reminds me of one of my parents (Q39) Treats me like a son/daughter (Q40)
Role Model	Serves as a role model for me (Q41) Is someone I identify with (Q42) Represents who I want to be (Q43)
Counseling	Serves as a sounding board for me to develop and understand myself (Q44) Guides my professional development (Q45) Guides my personal development (Q46)
Acceptance	Accepts me as a competent professional (Q47) Sees me as being competent (Q48) Thinks highly of me (Q49)

Summary

This chapter provided a detailed description of the research design, instruments for data collection, data collection, and procedures. Specifics on the statistical tests and the results of the survey are presented in the next chapter

CHAPTER IV

RESULTS

The purpose of this study was to determine what effect, if any, mentoring played in the lives and careers of female ATP. The following research questions guided this study:

Research Question Number One:

Is there a difference in self-reported perceptions of success between female Airline Transport Pilots who report having been mentored and those who have not?

Research Question Number Two:

Is there a difference in self-reported perceptions of success between female Airline Transport Pilots who report having been involved in a formal mentoring relationship compared to those who report being involved in an informal mentoring relationship?

Research Question Number Three:

Is there a difference in the amount of career oriented assistance, as measured by the Mentor Role Instrument, given to female Airline Transport Pilots who report having an informal mentoring relationship compared to those who report a formal mentoring relationship?

Research Question Number Four:

Is there a difference in the amount of psychosocial support, as measured by the Mentor Role Instrument, given to female Airline Transport Pilots who report having an informal mentoring relationship compared to those who report a formal mentoring relationship?

This chapter provides the necessary statistical analysis to answer each of the research questions. An alpha level of .05 was used for all statistical tests. An abbreviated narrative of the results, and corresponding tables are provided where appropriate.

Power Analysis

An A Priori power analysis for a 2 tailed t Test when looking for moderate effect (.3) with an alpha of .05 and a .95 beta showed the need for 134 total participants. A post hoc power analysis using the same criteria but with a sample size of 158 subjects reveals a beta (Type II Error) of .975. Post hoc testing using the same alpha and effect level but 84 participants (number of participants involved in the mentor group) resulted in a reduction in the beta to .887.

Participant Demographics

As discussed in Chapter III, there were 158 eligible participants in this study. All members of the study shared similar demographics.

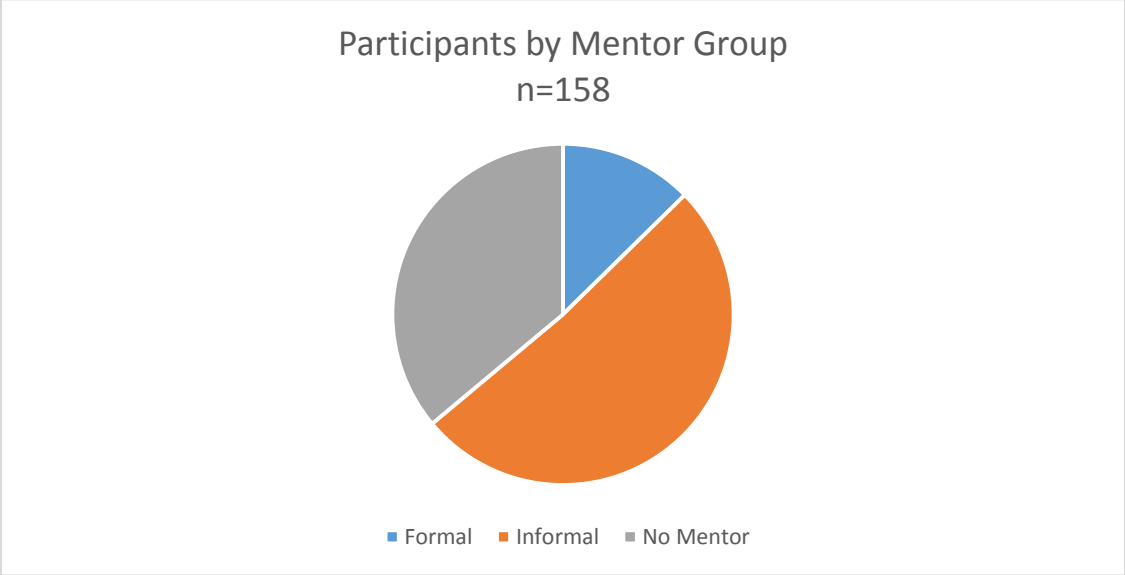

Figure 1: Participants by Mentor Group

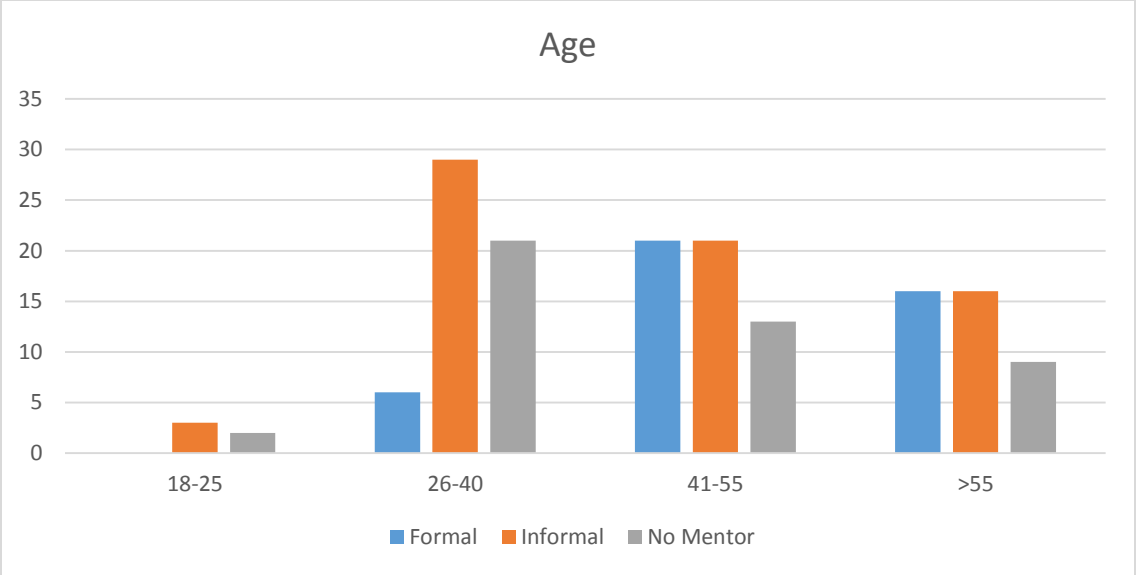

Figure 2: Age of Participants by Mentor Group

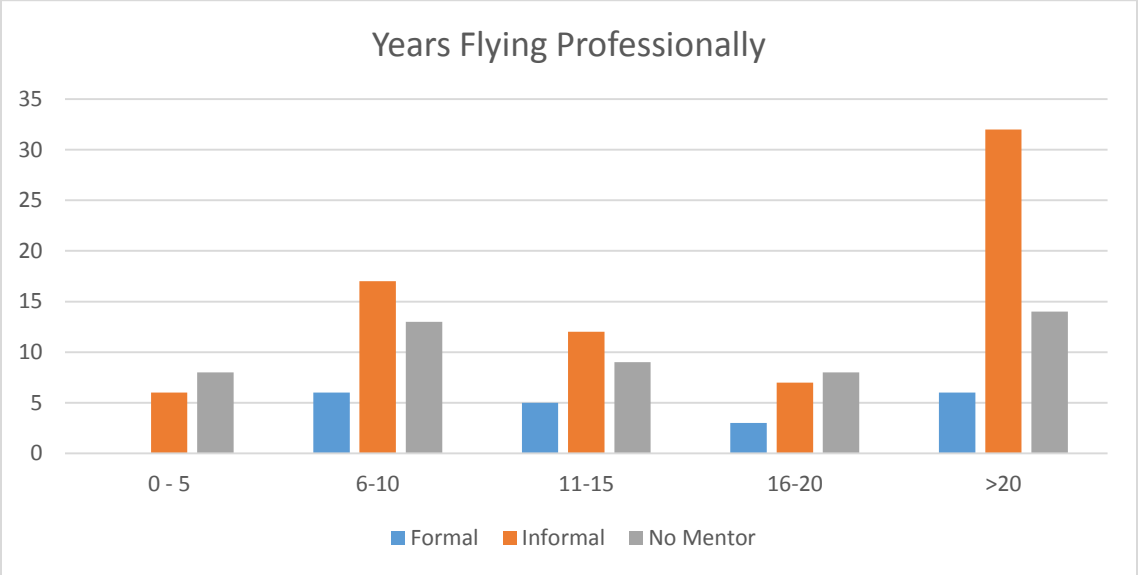

Figure 3: Years Flying Professionally by Mentor Group

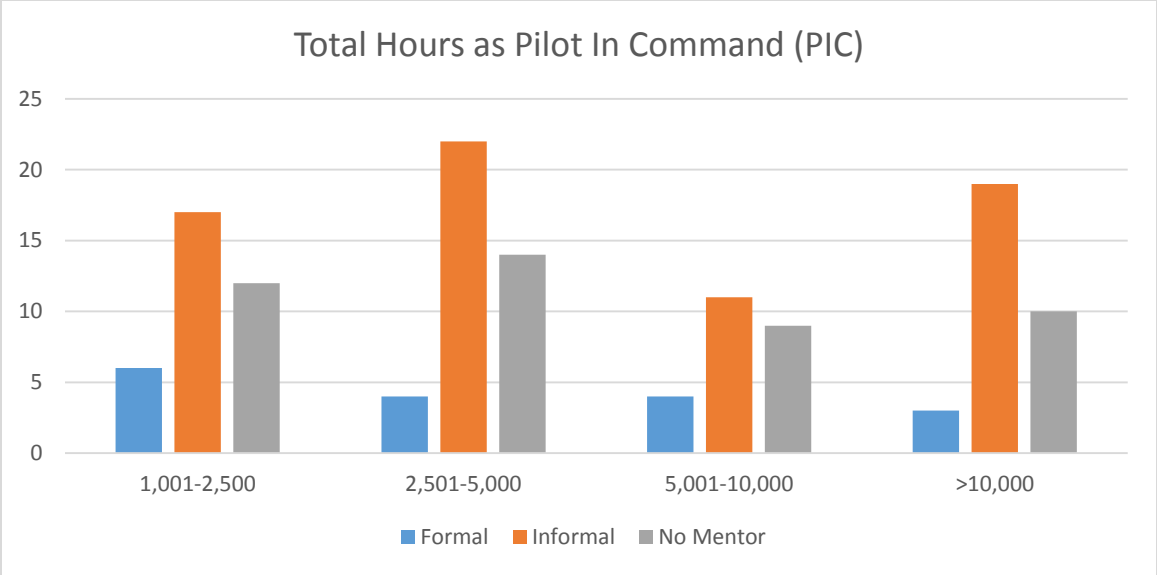

Figure 4: Total Hours as Pilot In Command (PIC) by Mentor Group

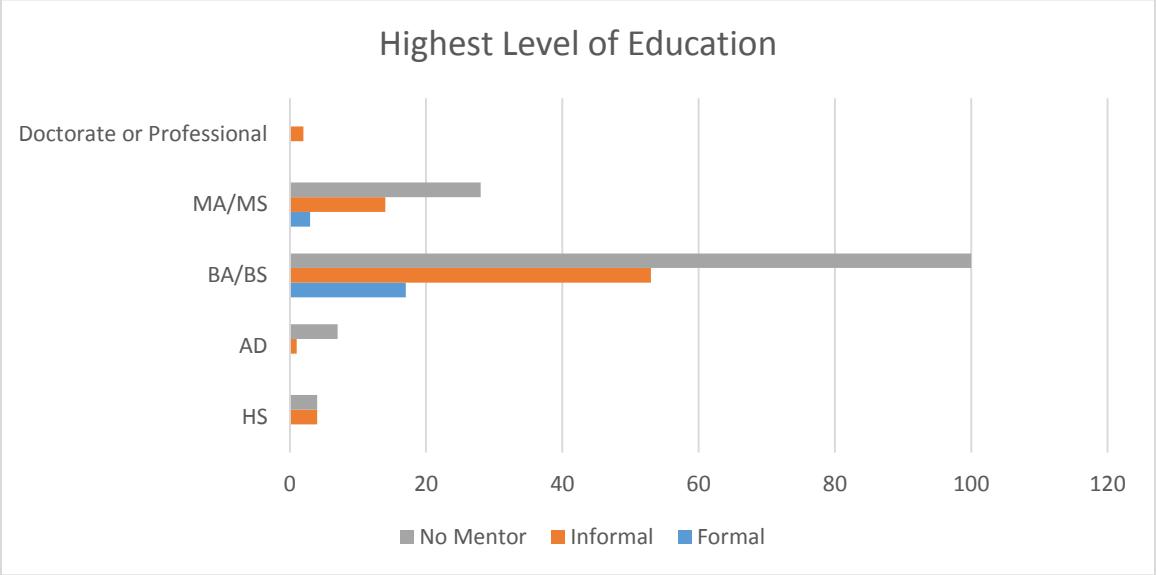

Figure 5: Highest Level of Education by Mentor Group

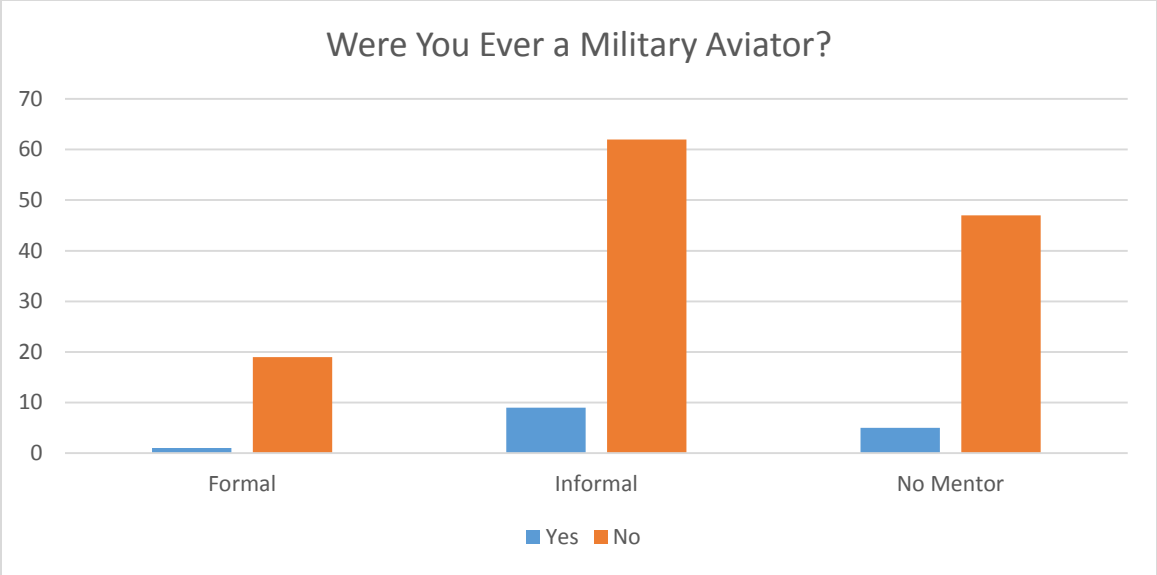

Figure 6: Military Aviation by Mentor Group

As the above charts clearly show, there is a consistency throughout the various demographic factors. Age, years of flying professionally, and total number of hours as Pilot in Command (PIC) all correlate across the three main mentoring groups. Those respondents who were older tended to have more years in the profession and a greater total number of hours as PIC.

As would be expected from this population (female ATP), the majority of respondents have at least a bachelor's degree (a bachelor's degree is required by all large scheduled airlines, but not by smaller, regional airlines). It is interesting to note that this is not universal. A minority of pilots in each category reported their highest level of education to be either a high school diploma or associate's degree.

Finally, it comes as no surprise that the number of female ATP that report being military aviators is extremely small. As discussed in Chapter 1, women were not permitted to fly military aircraft until 1974 and were not allowed to fly in combat until 1993. Even today the number of

female military aviators is very small. Because of these statutory restrictions, the majority of our respondents come from a strictly civilian background.

Statistical testing of the demographic variables failed to show significance except for the factors of age and total flight hours as PIC. There was a statistically significant difference in self-reported perceptions of success between those female ATP who reported having greater than 10,000 total flight hours as PIC and those who reported they had between 1,001 and 2,500 hours as PIC. Similarly there was a statistically significant difference in the means of those who identified themselves as being >55 years of age and those who indicated they were between 26 and 40 years old. Post Hoc testing was completed using Tukey HSD to indicate which pair of factors reached significance. These results are shown in tables two through seven.

Table 2: Total Flight Hours
How successful do you view yourself in your profession? Zero (not successful) to 100 (very successful)

	n	Mean	SD	SE	*95% Confidence Interval for Mean*	
					Lower	Upper
1,001 – 2,500	36	82.37	16.32	2.75	76.76	87.97
2,501 - 5,000	40	86.42	16.45	2.60	81.16	91.68
5,001 - 10,000	24	83.00	9.42	1.92	79.02	86.97
>10,000	32	92.43	7.13	1.26	89.86	95.00
Total	131	86.18	13.93	1.21	83.77	88.59

Table 3: Total Flight Hours ANOVA

Source	*df*	SS	MS	F	*P*
Between Groups	3	2005.782	668.594	3.654	.014*
Within Groups	127	23237.821	182.975		
Total	130	25243.603			

* Indicates statistical significance, $p<.05$

Table 4: Tukey HSD for Total Flight Hours
How successful do you view yourself in your profession? Zero (not successful) to 100 (very successful)

Total Hours PIC	*Total Hours PIC*	Mean Difference	SE	Sig
1,001 – 2,500	2,501-5,000	-4.053	3.130	.568
	5,001 - 10,000	-.6285	3.584	.998
	>10,000	-10.066	3.308	.015*

* Indicates statistical significance, $p<.05$

Table 5: Age
How successful do you view yourself in your profession? Zero (not successful) to 100 (very successful)

	n	Mean	SD	SE	*95% Confidence Interval for Mean*	
					Lower	Upper
18-25	6	80.83	16.66	6.80	63.34	98.32
26-40	67	80.67	17.89	2.18	76.30	85.03
41-55	46	87.52	11.59	1.70	84.07	90.96
>55	27	93.37	6.62	1.27	90.74	95.99
Total	146	85.18	15.14	1.25	82.70	87.66

Table 6: Age ANOVA

Source	*df*	SS	MS	F	*P*
Between Groups	3	3538.623	1179.541	5.637	.001*
Within Groups	142	29715.384	209.263		
Total	145	33254.007			

* Indicates statistical significance, $p<.05$

Table 7: Tukey HSD for Age
How successful do you view yourself in your profession? Zero (not successful) to 100 (very successful)

Total Hours PIC	*Total Hours PIC*	Mean Difference	SE	Sig
>55	18-25	12.537	6.528	.224
	26-40	12.698	3.297	.001*
	41-55	5.846	3.507	.345

* Indicates statistical significance, $p<.05$

Research Questions Number One and Two

Research Question Number One asks: "Is there a difference in self-reported perceptions of success between female Airline Transport Pilots who report having been mentored and those who have not?" Research Question Number Two is similar: "Is there a difference in self-reported perceptions of success between female Airline Transport Pilots who report having been involved in a formal mentoring relationship compared to those who report being involved in an informal mentoring relationship?"

To answer these question a one way ANOVA was conducted using the three mentoring groups as independent variables and the answers to the question, "How successful do you view yourself in your profession? Zero (not successful) to 100 (very successful)" as the dependent variable. The results are shown in Tables 8 and 9.

Table 8: Research Question Number One and Two Demographics
How successful do you view yourself in your profession? Zero (not successful) to 100 (very successful)

	n	Mean	SD	SE	*95% Confidence Interval for Mean*	
					Lower	Upper
Formal Mentoring	2	82.00	23.23	5.19	71.12	92.87
Informal Mentoring	74	86.78	12.94	1.50	83.78	89.78
No Mentoring	52	84.13	14.21	1.97	80.17	88.09
Total	146	85.18	15.14	1.25	82.70	87.66

Table 9: Research Question Number One and Two ANOVA

Source	*df*	SS	MS	F	*P*
Between Groups	2	449.409	224.704	.980	.378
Within Groups	143	229.403			
Total	145	33254.007			

There was no statistically significant difference between the means of the three groups. Given these findings, the answer to Research Question Number One and Two is: there is no difference in the self-reported perceptions of success between female Airline Transport Pilots who report having been involved in either a formal or informal mentoring relationship and those who had not.

Mentor Role Instrument (MRI)

All thirty items of the MRI were compared between the two mentoring subgroups: those who reported being involved in a formal mentoring relationship and those who stated their relationship was more organic (informal) in nature. Homogeneity of variance was assessed for both groups by Levene's Test for Equality of Variances. Where Levene's test was significant, the degrees of freedom were adjusted using the Welch-Satterthwaite method as calculated by SPSS©. An independent t-test was run on the data with a 95% confidence interval (CI) for the mean difference. The results are displayed in Appendix B.

Twenty Two out of thirty items displayed significance between the two groups. Those items that did not achieve significance are included in a separate table in Appendix B. The items that did not display significance were questions relating to the broader functions of exposure,

friendship, acceptance, parenting, and role model. While exposure is more closely related to the occupational aspects of mentoring, friendship, acceptance, parenting and role model are all identified with the psychosocial aspects of the mentoring relationship.

Ten Mentoring Functions

Ragins & McFarlin, (1990) designed the MRI to explore the ten main functions of a mentor originally outlined by Kram (1985). In this instrument, each function was evaluated by three Likert style questions. For this study, the answers for each question in the MRI were grouped according to their function as identified by Ragins & McFarlin, (1990). This resulted in ten new variables (see Table # 1). The means for each of these new variables was compared between the two main subgroups of mentored participants as described above. The means were compared using an Independent Sample T test. Homogeneity of variance was assessed for both groups by Levene's Test for Equality of Variances. Where Levene's test was significant, the degrees of freedom were adjusted using the Welch-Satterthwaite method as calculated by SPSS©.

Research Question Number Three

Research Question Number Three asks: "Is there a difference in the amount of career oriented assistance, as measured by the Mentor Role Instrument, given to female Airline Transport Pilots who report having an informal mentoring relationship compared to those who report a formal mentoring relationship?" To answer this question those areas of the MRI associated with career guidance as identified by Kram, (1985) and Ragins & McFarlin, (1990) were examined. Independent sample T Tests were conducted to assess for significance.

Homogeneity of variance was assessed for both groups by Levene's Test for Equality of Variances. Where Levene's test was significant, the degrees of freedom were adjusted using the

Welch-Satterthwaite method as calculated by SPSS©. An independent t-test was run on the data with a 95% confidence interval (CI) for the mean difference. The results are displayed in Table 10.

Table 10: Mentoring Functions Associated with Career Advancement

	n	M	SD	M Diff	*t*	*df*	*p*
Sponsor				-96.28	-3.07	62	.003*
Formal	10	67.60	94.82				
Informal	54	163.88	90.38				
Coach				-93.19	-3.44	60	.001*
Formal	10	110.00	99.54				
Informal	52	203.19	73.98				
Protect				-92.75	-2.78	63	.007*
Formal	9	44.22	77.4				
Informal	56	136.98	94.64				
Challenge				-106.15	-2.97	62	.004*
Formal	10	72.60	92.16				
Informal	54	178.75	105.42				
Exposure				-64.92	-2.42	73	.018*
Formal	13	106.15	95.46				
Informal	62	171.08	86.04				

As Table 10 clearly shows, there is statistical significance in each of the five mentoring functions associated with career advancement. In each case the mean for the informal mentor group was significantly higher than the formal mentor group. Also, in each of these areas homogeneity of variance was shown by Levene's test.

Given these findings the answer to Research Question Number Three is unambiguous. There is a significant difference in the amount of career oriented assistance given to female ATP who had an informal mentoring relationship when compared to those who reported a formal mentoring relationship. In all cases the female ATP who had an informal mentoring relationship reported higher scores than those who had a formal mentoring experience. In the case of the female ATP in this study, informal mentoring was clearly superior to formal mentoring when it comes to career oriented assistance and advice.

Research Question Number Four

Research Question Number Four deals with psychosocial support within the context of the mentoring relationship. It asks, "Is there a difference in the amount of psychosocial support, as measured by the Mentor Role Instrument, given to female Airline Transport Pilots who report having an informal mentoring relationship compared to those who report a formal mentoring relationship?"

As with previous data, homogeneity of variance was assessed for both groups by Levene's Test for Equality of Variances. Where Levene's test was significant, the degrees of freedom were adjusted using the Welch-Satterthwaite method as calculated by SPSS©. An independent t-test was run on the data with a 95% confidence interval (CI) for the mean difference. The results are displayed in Table 11.

Table 11: Mentoring Functions Associated with Psychosocial Concerns

	n	M	SD	M Diff	*t*	*df*	*p*
Friendship (≠V)				-51.25	-2.06	12.87	.060
Formal	13	218.53	88.08				
Informal	68	269.79	38.26				
Parent				-82.99	-2.50	66	.015*
Formal	10	74.80	79.25				
Informal	58	157.79	99.37				
Role Model				-47.46	-3.14	76	.002*
Formal	13	208.07	72.28				
Informal	65	255.53	44.12				
Counseling				-105.44	-4.88	73	.000*
Formal	12	108.75	71.25				
Informal	63	214.19	68.03				
Acceptance (≠V)				-41.64	-1.77	12.92	.100
Formal	13	236.38	83.09				
Informal	67	278.08	36.66				

* Indicates statistical significance, $p<.05$
≠V = Equal Variance Not Assumed

Statistical significance was found in three out of five factors concerning interpersonal relationships (Role Modeling, Counseling, and Parent). Acceptance and Friendship did not demonstrate significance when the smaller degrees of freedom were used to address the significant Levene's Test.

The results are inconclusive. They make it difficult to say with a certainty that psychosocial concerns are better addressed in informal mentoring relationships than formal ones. Given that in each case the informal group rated their experiences higher than the formal group, the preponderance of evidence suggests that informal mentoring relationships are better at providing psychosocial support than formal mentoring experiences. That said, these differences do not rise to the level of statistical significance and therefore cannot be said to be the result of something other than chance.

Summary

Chapter IV discussed the four research questions. Research Questions Number One and Two showed no statistically significant difference between female ATP that had been involved in mentoring relationships and those that had not.

Research Question Number Three was answered unequivocally, there is a statistically significant difference in the amount of career oriented assistance given to female ATP who had an informal mentoring relationship when compared to those who reported a formal mentoring relationship. In the case of the female ATP in this study, informal mentoring was clearly superior to formal mentoring when it comes to career oriented assistance and advice.

Research Question Number Four was more ambiguous. The results were inconclusive. Although the preponderance of evidence suggests that informal mentoring relationships are better at providing psychosocial support than formal mentoring experiences, the differences do not rise to the level of statistical significance and therefore cannot be generalized.

CHAPTER V

DISCUSSION

This chapter will provide an overview of the results in relation to the studies theoretical framework, literature review, and this researcher's observations. This study set out to answer four research questions: do female ATP who have been mentored perceive themselves to be more successful than those who have not been mentored? Likewise, do female ATP who were involved in formal mentoring relationships perceive themselves to be more successful than those involved in informal mentoring relationships? Finally, this research tested which mentoring relationship, formal or informal, offered the greatest perceived advantages in terms of career assistance and psychosocial support.

Demographics

The demographics of this research population showed a bimodal breakdown in terms of age, total number of hours as PIC, and years of professional flight experience. The most common age range reported was between 26-40 followed by 41-55. In terms of years of experience flying professionally, 6-10 and >20 received the most responses. This correlates with the data concerning the total number of flight hours as PIC: 2,501-5000 hours received the most responses followed by >10,000 hours.

These numbers are consistent throughout the demographic data. It is plausible that a pilot who is between twenty-six and forty years old would also have amassed between 2,501 and 5,000 hours as PIC and have between six and ten years of professional flying experience since professional airline pilots can fly 1,000 hours per year.

The bimodal nature of the data can be seen in not only the age, but number of years in the profession and total number of hours as PIC. Forty-one through fifty-five and greater than fifty-

five are the next two largest age ranges reported by study participants. This corresponds with >20 years of professional service and >10,000 flight hours as PIC being the next highest grouping in their respective categories.

When an ANOVA was done using the various demographic categories outlined above as the Independent Variable and the self-reported perception of success as the Dependent Variable, two areas showed statistical significance: age and number of hours as PIC. Pilots between the ages of 26-40 reported their perceptions of career success to be statistically significant less than those female ATP who reported their age to be >55. Likewise, those female ATP who reported having >10,000 flight hours as PIC rated their perceptions of career success to be statistically more significant than those female ATP who had between 1,001 and 2,500 flight hours as PIC.

Neither of these findings is surprising. In both cases, you are looking at opposite ends of the professional flying career. Today, it takes a minimum of 1000 flight hours as PIC to qualify for ATP under very restricted circumstances. Less than a decade ago it took 1500 flight hours as PIC to qualify. A civilian airline pilot with between 1,001-2,500 flight hours as PIC is at the beginning of their career. Likewise, a professional pilot with greater than 10,000 flight hours as PIC is in the middle to end of their career. It would be surprising if an older, more experienced female ATP did not feel a greater sense of career success than a younger, less experienced colleague.

Research Question Number One and Two

This study explored what role, if any, mentoring had on the lives female ATP. Research Question Number One asks: "Is there a difference in self-reported perceptions of success between female Airline Transport Pilots who report having been mentored and those who have not?" Research Question Number Two is closely related, "Is there a difference in self-reported

perceptions of success between female Airline Transport Pilots who report having been involved in a formal mentoring relationship compared to those who report being involved in an informal mentoring relationship?"

As shown in Chapter Four, in both cases there was no statistically significant difference in the perceived feelings of success between those female ATP who had been mentored and those who had not. Additionally, there was no difference between those female ATP who reported informal or formal mentoring and those who reported the opposite form of mentoring or no mentoring at all.

One possible reason for this result is the subject group themselves. Female ATP are by definition at the peak of their profession.

As the demographic information showed, there was a bimodal pattern to the respondents. The majority of participants were between 26 -40 years old, had 6-10 years of professional flying experience, and had accumulated between 2,501 – 5,000 hours as PIC. The second largest group were older, reporting their ages to be between 41-55 and having over twenty years of professional flight experience and greater than 10,000 hours as PIC.

These older women in this study were the trailblazers. They broke the glass ceiling. They literally and figuratively turned a cockpit into a flight deck. These women were hired in the late 1970s and early 1980s. They began flying at a time when their presence was a spectacle. There were only 480 female ATP in the FAA Database in 1980 (Douglas, 2015, p. 218). These women did not have more senior women to act as role models; they were the first. They broke new ground for those that followed.

The participants in this study were established professionals with a proven track record of success. Because of this, the lack of significance is not unexpected. A future study involving younger, less established professionals may yield different results.

Research Question Number Three

Research Question Number Three asks: "Is there a difference in the amount of career oriented assistance, as measured by the Mentor Role Instrument, given to female Airline Transport Pilots who report having an informal mentoring relationship compared to those who report a formal mentoring relationship?" For the female ATP involved in this study the answer is undeniably yes. There is a statistically significant difference in the amount of career oriented assistance given to female ATP who had reported an informal mentoring relationship when compared to those who reported a formal mentoring experience.

Significance was reached in each of the five factors associated with career advancement: sponsorship, coaching, protection, challenging assignments, and exposure. For the female ATP who participated in this study, it was clear that those who reported an informal mentoring relationship found it superior when compared to their formal counterparts.

A word of caution needs to be added here. The survey design specifically asked for the respondent's strongest relationship. "If you have had more than one mentoring relationship, please answer the following questions in terms of your strongest relationship." Given the stronger bond associated with informal mentoring relationships (they often last longer and end when one member moves), this emphasis on the strongest relationship could have overshadowed the effects of less intimate but still meaningful formal mentoring relationships. These formal mentoring relationships may very well have provided invaluable career advice and assistance.

Research Question Number Four

Research Question Number Four deals with psychosocial support within the context of the mentoring relationship. It asks, "Is there a difference in the amount of psychosocial support, as measured by the Mentor Role Instrument, given to female Airline Transport Pilots who report having an informal mentoring relationship compared to those who report a formal mentoring relationship?" The answer to this question is less clear.

Significance was found in 3/5 factors associated with psychosocial concerns and support. The factors associated with Parent, Role Model, and Counseling all reached significance, while the factors for Acceptance and Friendship both fell short when the smaller degrees of freedom necessitated by the unequal variances were used to lessen the chance of a Type I error. For three out of five factors, the respondents felt that informal mentoring was superior to formal mentoring relationships.

The lack of significance in the last two factors was a surprise to this researcher. In the literature, informal mentoring relationships are often associated more closely with psychosocial factors than career advancement. For the female ATP in this study that is not necessarily the case. The data supports an argument that both protégé groups, those who reported a formal mentoring relationship and those who experienced an informal mentoring relationship, felt equally valued and cared for by their mentors. It is possible that for the women involved in this study, when it came to the constructs of acceptance and friendship, they were fortunate to have a very high quality formal and informal mentoring relationships.

A contributing factor may also be the pilot lifestyle. Airline pilots lead two separate lives: one nomadic and one more grounded. While flying, the female ATP is gone from home for three to seven days on average. During that time, they may be with several different flight and cabin crews. Working with the same group of people on a routine basis is not the industry

norm. For this reason, work relationships are harder to develop and maintain than those experienced in a more geographically confined profession. Rather than looking to a mentor or colleagues for acceptance and validation, these functions may be met while at home.

Additionally, as mentioned above, these women are experienced professionals with a record of accomplishment. While the need for acceptance and friendship does not disappear as you mature in your profession, it does diminish. These women are accepted. Their need for external validation may very well be less than a novice pilot flying the line for the first time. A more robust, longitudinal study is needed to determine what the mentoring needs are for female pilots during the various stages of their career.

Limitations

Small sample size limit the generalizability of this research. Not every participant answered every question. Those that did not answer were not included in the calculations for that question. The effect of these dropped subjects becomes more apparent as you proceed through the statistical testing. When dealing with all thirty items on the MRI, the number of subjects for formal mentoring was 10-14. It was 54-69 for the informal group. Similarly, for the ten function tests the number available for the informal group was 52-67 and 9-13 for the formal group. Finally, the number of participants in the final three factor testing was 7-10 for the formal mentoring group and 46-58 in the informal mentor group. Dwindling sample sizes reduces the power and hampers generalizability.

Another limitation was specificity. While it is important to prevent compounding variables from invalidating the study results, restricting the study to only women pilots ignore the larger aerospace industry as a whole. Air Traffic Control, airport management, maintenance, flight ops, cabin crew, dispatch, corporate management, etc. all are areas where women are

making contributions to the industry. How are their mentoring needs different from female ATP? Are their concerns similar or widely divergent?

Implications for Future Research

It would be beneficial to have a more longitudinal approach with any future research. What stage of their career is the female ATP in? How are the mentoring needs of a new line pilot different from those of a Senior Captain nearing retirement? What are the unique challenges faced by younger women pilots with children compared with those who do not have children or whose children are no longer at home? Are the mentoring needs of women pilots the same as men or are there gender based differences? Each of these questions would best be addressed in a mixed methods qualitative study that looked at pilot needs across the lifespan of their career.

With a pilot shortage looming, another area in need of research is determining whether or not encouraging female pilots who have left the flight deck to return is a viable strategy for scheduled air carriers (this is a common tactic in several industries facing a shortage of qualified applicants, especially healthcare)? Would a formal mentoring program help these returnees have a smoother transition?

Application of Results

Given the direction of this research's data, a very practical question remains: how can an organization encourage the development of informal mentoring relationships? What behind the scenes steps can be taken to encourage potential mentors and protégés to meet and make a connection? Given the obvious benefits of such relationships, what can an organization do to stimulate their creation?

This author would recommend a program that concentrates on architecture, access, and awareness. Architecture refers to the physical plant. How do you design a space that is conducive to interaction? Traditional office spaces are designed with isolation in mind. Each office or cubicle has walls and a door. These physical barriers also erect emotional hurdles. Physical obstructions mark territory. It can be very daunting for a younger protégé to breach these defenses to ask a question or seek guidance. To do so you are quite literally going into someone else's house. This simple step may be too much to ask for some people.

In addition to marking territory, physical barriers also establish and reinforce the power differential. The older more experienced mentor is ensconced behind their desk while the potential protégé is in a subservient position in front of a physical and psychological separation. This physical positioning of the players can evoke a number of business related constructs, from the formal job interview to a disciplinary session with a supervisor.

Attempting to encourage the development of a mutually beneficial relationship based on trust may be difficult in such an environment. An open area that is free of physical barriers is much more likely to result in the types of interactions that result in the establishment of trust and confidence. Towards this end whenever possible it is advantageous to have the two parties meet on neutral ground. A lounge area next to the coffee cart or even outdoors as weather permits.

For pilots who are in an office environment for training or a non-flying assignment, informal gatherings such casual lunch meetings and Friday happy hours can be one way of placing mentors and protégés in close proximity. Management can organize the space. They cannot force the relationship.

As mentioned previously, aviation is unique in that most interactions will not happen in an office setting. Very few pilots work from an office or in an office setting. Because of this the

architecture has to adapt. Where in the airport can a prospective mentor and protégé meet? Timing becomes critical here. Attempting to strike up a conversation after the conclusion of a very stressful four-day duty cycle will very likely be unproductive. Attempting to establish a relationship at the end of the duty day is likewise counterproductive. Because of this, the best chance to try and interact could very well be before the protégé's next hitch.

One possible way to mitigate these shortcomings is scheduling. Is management willing to schedule two people together for a cycle for the express purpose of seeing if a relationship develops? This is not the industry norm and would undoubtedly be looked at askance by those not singled out for such efforts. That said, proximity is the key in any relationship and there has to be concessions made towards this end. Once a nascent relationship begins to develop, modern technology quickly becomes indispensable.

The second important theme for any organization attempting to set the stage for informal mentoring relationships to develop is access. Protégés must have access to mentors. As with architecture, what institutional mores and folkways prevent mentors and protégés from interacting? The protégé must not only feel safe approaching a more senior person in the organization for assistance or advice, but welcome.

Are the senior members of the organization committed to growing the next generation of leaders? If the organization is committed to developing its human capital, it will be obvious from the top down and permeate the entire chain of command. Likewise, if senior management is not wedded to the idea of fostering the next generation of leaders, no amount of architectural modifications will be successful.

The commitment to access must come from the Boardroom. It cannot be something isolated within education and training or middle management. In this way it is very similar to

safety culture within the airlines. While some initiatives are best served as far down the organizational chart as possible, both safety and access must come from the top. Both require complete and unequivocal buy in from senior management to be successful.

Finally, this author would encourage organizations looking to encourage the development of informal mentoring relationships to train their informal and formal leaders to be aware of their surroundings. They must encourage their associates to constantly be on the lookout for that junior member who has the potential for success, and could benefit from the experience of someone who understands how the organization or profession works.

Some people are more intuitive than others, but this is a skill that can be developed. Empathy is not genetic; it is a behavior that improves with practice and experience. Since informal mentoring relationships are not assigned, it is imperative that both potential protégés and mentors be aware of and open to the opportunities that arise during the course of their careers. To seize an opportunity, one must first recognize it.

Summary

This study dealt with the role of mentoring in the lives and careers of women ATP. Research Questions One and Two dealt with perceived feelings of success among study participants who reported being involved in a formal mentoring relationship, and informal mentoring relationship, or no mentoring relationship at all. It was determined that there was no overall statistically significant difference in the perceived feelings of success between any of the three main groups.

That is not to say the mentoring relationship was not viewed as beneficial. One possible reason for the lack of significance may be the study participants themselves. These women are established professionals with a proven record of accomplishment. There was no statistical

difference in their perceived feelings of success because all three groups are at the peak of their professional development (the ATP certificate is the Federal Aviation Administration's highest pilot rating). Additional research dealing with the mentoring needs at different stages during a female pilot's career would be helpful to clarify this understanding.

Research Question Number Three dealt with the amount of career associated assistance and advice received by those study participants who reported having a formal versus informal mentoring relationship. There was a statistically significant difference in all five mentor functions associated with career assistance and development between the informal and formal mentor groups. In all five cases the informally mentored group recorded higher scores on the MRI when compared to the formal mentor group. Previous research has shown that informal mentoring relationships are viewed as being more beneficial to the protégé. The results from this study are in line with that previous research.

Research Question Number Four asked if there was a difference in the amount of psychosocial support given to female ATP as reported by those having a formal versus informal mentoring relationship. The answer to this research question was much less clear cut. Three out of the five factors associated with psychosocial support in the mentoring relationship showed a statistically significant difference between the formal and informal mentoring groups. In all three instances the means of the informal mentoring group were significantly higher.

The two factors that did not reach significance (Friendship and Acceptance) both had significant Levene's Tests which necessitated a much more conservative series of calculations to prevent inadvertent Type I error. It is also possible that the lack of significance can be traced back to the participants themselves. The subjects in this research were all experienced

professionals with a proven record of accomplishments. Their need for friendship and acceptance may simply be less than that of a more junior colleague.

It is also possible that the instructions provided during the survey process may have prejudiced the results. By asking the female ATP to choose their strongest mentoring relationship (if they had more than one), this researcher may have inadvertently skewed the responses by negating the effects of other, less intense mentoring relationships.

The limitations of this study revolve around the small sample size. The limited number of respondents reduces the power and hampers the generalizability of the research. The subject population (female ATP) is very small, approximately 6,500. While the sample size was not large enough to statistically speak to the entire population, it was large enough to achieve a moderate amount of power when discussing the between group results.

In the future, a more longitudinal, mixed methods, qualitative study of female ATP that addresses the different mentoring needs of the participants across the lifespan would be helpful to place this research in context.

Finally, the direct application of this research is how do organizations promote informal mentoring relationships among their associates? This author suggests that a program which emphasizes architecture, access, and awareness may meet the needs of both the protégé and mentor.

APPENDIX A

Survey Instrument

This survey is intended for professional female aviators (pilots) who presently hold or in the past have held an ATP or Restricted ATP Certificate or international equivalent. It is designed to determine what effect mentoring has played in their career.
Mentoring is a developmental relationship that pairs a more experienced and knowledgeable mentor with a less experienced protégé. The relationship supports the protégé's career, but also offers important benefits for the mentor. Both members may learn, grow, and develop from the mentoring relationship.
Some mentoring relationships develop spontaneously and informally, whereas others are part of a formal mentoring program. In formal mentoring programs, mentors and protégés are matched and assigned in some way.

Are you a female aviator (pilot) who presently holds or has in the past held a ATP or Restricted ATP Certificate or international equivalent?

- ❍ Yes I am a female aviator who presently holds or has in the past held an ATP or Restricted ATP Certificate or international equivalent. (1)
- ❍ NO I AM NOT female aviator who presently holds or has in the past held an ATP or Restricted ATP Certificate or international equivalent. (2)

If NO I AM NOT female aviator ... Is Selected, Then Skip To End of Survey

Q1 What is your age?

- ❍ 18-25 (1)
- ❍ 26-40 (2)
- ❍ 41-55 (3)
- ❍ > 55 (4)
- ❍ I prefer not to answer (5)

Q53 Military Service

- ❍ I AM or WAS a military aviator (1)
- ❍ I AM NOT or WAS NOT a military aviator (2)
- ❍ I prefer not to answer (3)

Q5 What is your total number of hours as pilot in command?
- ❍ 0-500 hours (1)
- ❍ 501-1,000 hours (2)
- ❍ 1,001-2,500 hours (3)
- ❍ 2,501-5,000 hours (4)
- ❍ 5,001-10,000 hours (5)
- ❍ > 10,000 hours (6)

Q8 What is your total turbine engine flight time? (Short Answer)

Q9 What is your highest level of education?
- ❍ High School Diploma (1)
- ❍ Associate Degree (2)
- ❍ Bachelor Degree (3)
- ❍ Master Degree (4)
- ❍ Doctorate or Professional Degree (5)

Q10 If you have a college degree, is at least one of your degrees in aviation or related field?
- ❍ Yes (1)
- ❍ NO (2)

Q54 How successful do you view yourself in your profession?
_____ Zero (not successful) to 100 (very successful) (1)

Q55 How would you describe your position within your organization?
- ❍ Line Employee (1)
- ❍ Supervisor (Responsible for day to day operations) (2)
- ❍ Middle Management (Department level authority. I have hire/fire authority) (3)
- ❍ Senior Management (Multiple department or location responsibility) (4)
- ❍ Executive Leadership (Strategic planning and budget. Organization wide authority) (5)
- ❍ I am retired (6)

Q56 How long have you been in your present position? If you are retired, use your last position.
- ❍ 0-5 years (1)
- ❍ 6-10 years (2)
- ❍ 11-15 years (3)
- ❍ 16-20 years (4)
- ❍ > 20 years (5)

Q57 How long have you been with your current employer? If you are retired, use your last position. .

- ❍ 0-5 years (1)
- ❍ 6-10 years (2)
- ❍ 11-15 years (3)
- ❍ 16-20 years (4)
- ❍ > 20 years (5)

Q58 How long have you been flying professionally?

- ❍ 0-5 years (1)
- ❍ 6-10 years (2)
- ❍ 11-15 years (3)
- ❍ 16-20 years (4)
- ❍ > 20 years (5)

Q11 Are you currently or have you ever been in a mentoring relationship? If you have had more than one mentoring relationship, please answer the following questions in terms of your strongest relationship.

- ❍ Yes (1)
- ❍ No (2)

If No Is Selected, Then Skip To End of Survey

Q13 Was this relationship assigned as part of a formal mentoring program?

- ❍ Yes, it was assigned (1)
- ❍ No, it was not assigned (2)

Q49 How long did this mentoring relationship last?

- ❍ 1-6 months (1)
- ❍ 6 months to 1 year (2)
- ❍ 2-4 years (3)
- ❍ 5 years (4)
- ❍ 6+ years (5)

Q14 Was your mentor of the same sex (gender)?

- ❍ Yes (1)
- ❍ No (2)
- ❍ I prefer not to answer (3)

Q64 Do you still correspond/are you still in contact with your mentor?

- ❍ Yes (1)
- ❍ No (2)

Q50 For each of the following questions, answer in terms of your STRONGEST mentoring relationship.

Q32 My Mentor: Helps me be more visible in the organization
_____ 0 (strongly disagree) to 100 (strongly agree) (1)

Q33 My Mentor: Creates opportunities for me to impress important people in the organization
_____ 0 (strongly disagree) to 100 (strongly agree) (1)

Q34 My Mentor:Brings my accomplishments to the attention of important people in the organization
_____ 0 (strongly disagree) to 100 (strongly agree) (1)

Q35 My Mentor: Is someone I can confide in
_____ 0 (strongly disagree) to 100 (strongly agree) (1)

Q36 My Mentor: Provides support and encouragement
_____ 0 (strongly disagree) to 100 (strongly agree) (1)

Q50 My Mentor: Is someone I can trust
_____ 0 (strongly disagree) to 100 (strongly agree) (1)

Q47 My Mentor: Accepts me as a competent professional
_____ 0 (strongly disagree) to 100 (strongly agree) (1)

Q48 My Mentor: Sees me as being competent
_____ 0 (strongly disagree) to 100 (strongly agree) (1)

Q49 My Mentor: Thinks highly of me
_____ 0 (strongly disagree) to 100 (strongly agree) (1)

Q38 My Mentor: Is like a father/mother to me
_____ 0 (strongly disagree) to 100 (strongly agree) (1)

Q39 My Mentor: Reminds me of one of my parents
_____ 0 (strongly disagree) to 100 (strongly agree) (1)

Q40 My Mentor: Treats me like a son/daughter
_____ 0 (strongly disagree) to 100 (strongly agree) (1)

Q41 My Mentor: Serves as a role-model for me
_____ 0 (strongly disagree) to 100 (strongly agree) (1)

Q42 My Mentor: Is someone I identify with
_____ 0 (strongly disagree) to 100 (strongly agree) (1)

Q43 My Mentor: Represents who I want to be
_____ 0 (strongly disagree) to 100 (strongly agree) (1)

Q44 My Mentor: Serves as a sounding board for me to develop and understand myself
_____ 0 (strongly disagree) to 100 (strongly agree) (1)

Q45 My Mentor: Guides my professional development
_____ 0 (strongly disagree) to 100 (strongly agree) (1)

Q46 My Mentor: Guides my personal development
_____ 0 (strongly disagree) to 100 (strongly agree) (1)

Q26 My Mentor: Protects me from those who may be out to get me
_____ 0 (strongly disagree) to 100 (strongly agree) (1)

Q27 My Mentor: "Runs interference" for me in the organization
_____ 0 (strongly disagree) to 100 (strongly agree) (1)

Q28 My Mentor: Shields me from damaging contact with important people in the organization
_____ 0 (strongly disagree) to 100 (strongly agree) (1)

Q25 My Mentor: Suggests specific strategies for achieving my career aspirations
_____ 0 (strongly disagree) to 100 (strongly agree) (1)

Q18 My Mentor: Helps me attain desirable positions
_____ 0 (strongly disagree) to 100 (strongly agree) (1)

Q19 My Mentor: Uses his/her influence to support my advancement in the organization
_____ 0 (strongly disagree) to 100 (strongly agree) (1)

Q29 My Mentor: Gives me tasks that require me to learn new skills
_____ 0 (strongly disagree) to 100 (strongly agree) (1)

Q30 My Mentor: Provides me with challenging assignments
_____ 0 (strongly disagree) to 100 (strongly agree) (1)

Q31 My Mentor: Assigns me tasks that push me into developing new skills
_____ 0 (strongly disagree) to 100 (strongly agree) (1)

Q22 My Mentor: Uses his/her influence in the organization for my benefit
_____ 0 (strongly disagree) to 100 (strongly agree) (1)

Q23 My Mentor: Helps me learn about other parts of the organization
_____ 0 (strongly disagree) to 100 (strongly agree) (1)

Q24 My Mentor: Gives me advice on how to attain recognition in the organization
_____ 0 (strongly disagree) to 100 (strongly agree) (1)

APPENDIX B

Mentor Role Instrument (MRI) Individual T Tests

	n	M	SD	M Diff	*t*	*df*	*p*
My Mentor:							
Helps me be more visible in the organization				-8.56	-.909	79	.366
Formal	14	46.00	33.38				
Informal	67	54.56	31.80				
Creates opportunities for me to impress important people in the organization				-24.30	-2.49	77	.015*
Formal	13	29.92	34.42				
Informal	66	54.22	31.65				
Brings my accomplishments to the attention of important people in the organization				-27.29	-2.63	74	.010*
Formal	13	30.38	34.54				
Informal	63	57.68	33.91				
Is someone I can confide in (≠V)				-16.06	-1.82	14.63	.089
Formal	13	68.46	30.22				
Informal	68	84.52	22.43				
Provides support and encouragement (≠V)				-21.24	-2.25	13.58	.041*
Formal	14	71.42	34.91				
Informal	68	92.67	11.46				
Is someone I can trust (≠V)				-13.23	-1.84	14.02	.086
Formal	14	79.35	26.26				
Informal	68	92.58	11.40				

Accepts me as a competent professional (≠V)				-10.11	-1.32	14.39	.205
Formal	14	82.42	27.80				
Informal	68	92.54	14.05				
Sees me as being competent (≠V)				-11.34	-1.51	14.13	.152
Formal	14	81.78	27.45				
Informal	69	93.13	12.62				
Thinks highly of me (≠V)				-17.66	-2.24	12.98	.043*
Formal	13	74.92	27.81				
Informal	68	92.58	12.77				
Is like a father/mother to me				-22.40	-1.95	71	.055
Formal	11	29.45	31.25				
Informal	62	51.85	35.61				
Reminds me of one of my parents (≠V)				-26.70	-2.99	16.17	.009*
Formal	10	22.10	24.25				
Informal	60	48.81	35.32				
Treats me like a son/daughter (≠V)				-32.61	-3.58	14.88	.003*
Formal	10	21.30	25.30				
Informal	62	53.91	34.17				
Serves as a role model for me (≠V)				-12.96	-1.55	13.01	.145
Formal	13	75.15	29.55				
Informal	66	88.12	13,57				
Is someone I identify with				-8.40	-1.21	77	.228
Formal	13	74.00	26.61				
Informal	66	82.40	22.02				
Represents who I want to be				-25.13	-4.43	78	.000*
Formal	13	58.92	21.47				
Informal	67	84.05	18.17				

Serves as a sounding board for me to develop and understand myself				-30.12	-3.47	75	.001*
	Formal	13	46.30	31.61			
	Informal	64	76.43	27.88			
Guides my professional development				-38.70	-4.63	76	.000*
	Formal	12	36.83	27.97			
	Informal	66	75.57	26.39			
Guides my personal development				-31.33	-3.56	74	.001*
	Formal	12	26.33	19.81			
	Informal	64	58.67	30.13			
Protects me from those who may be out to get me (≠V)				-40.40	-4.22	15.56	.001*
	Formal	11	15.72	28.31			
	Informal	61	56.13	33.63			
"Runs interference" for me in the organization (≠V)				-26.42	-3.16	19.43	.005*
	Formal	11	16.00	23.28			
	Informal	59	42.42	33.63			
Shields me from damaging contact with important people in the organization				-26.14	-2.25	64	.028*
	Formal	9	16.66	31.43			
	Informal	57	42.80	32.48			
Suggest specific strategies for achieving my career aspirations (≠V)				-34.40	-3.04	12.52	.010*
	Formal	12	45.08	37.84			
	Informal	62	79.48	22.32			

Helps me attain desirable positions				-30.90	-3.05	70	.003*
Formal	12	31.50	35.90				
Informal	60	62.40	31.22				
Uses his/her influence to support my advancement in the organization				-27.68	-2.70	71	.008*
Formal	12	22.08	30.65				
Informal	61	49.77	32.69				
Gives me tasks that require me to learn new skills				-35.15	-2.94	66	.004*
Formal	11	22.45	31.96				
Informal	57	57.61	36.93				
Provides me with challenging assignments				-28.45	-2.34	64	.022*
Formal	11	28.00	35.17				
Informal	56	56.45	36.96				
Assigns me tasks that push me into developing new skills (≠V)				-39.72	-4.73	22.30	.000*
Formal	11	20.90	22.46				
Informal	55	60.63	36.65				
Uses his/her influence in the organization for my benefit				-31.21	-2.57	63	.012*
Formal	10	19.60	32.06				
Informal	56	50.81	35.71				
Helps me learn about other parts of the organization				-26.58	-2.55	67	.013*
Formal	13	36.76	39.91				
Informal	56	63.35	32.32				
Gives me advice on how to attain recognition in the organization				-36.19	-3.29	62	.002*

Formal	10	23.10	31.81
Informal	54	59.29	31.89

* Indicates statistical significance, $p<.05$
≠V = Equal Variance Not Assumed

APPENDIX C

MRI Items that did not show significance

MRI items that did not show significance

	n	M	SD	M Diff	*t*	*df*	*p*
My Mentor: Helps me be more visible in the organization (Exposure)				-8.56	-.909	79	.366
Formal	14	46.00	33.38				
Informal	67	54.56	31.80				
Is someone I can Confide in (≠V) (Friendship)				-16.06	-1.82	14.63	.089
Formal	13	68.46	30.22				
Informal	68	84.52	22.43				
Is someone I can trust (≠V) (Friendship)				-13.23	-1.84	14.02	.086
Formal	14	79.35	26.26				
Informal	68	92.58	11.40				
Accepts me as a competent professional (≠V) (Acceptance)				-10.11	-1.32	14.39	.205
Formal	14	82.42	27.80				
Informal	68	92.54	14.05				
Sees me as being competent (≠V) (Acceptance)				-11.34	-1.51	14.13	.152
Formal	14	81.78	27.45				
Informal	69	93.13	12.62				
Is like a father/mother to me (Parent)				-22.40	-1.95	71	.055
Formal	11	29.45	31.25				
Informal	62	51.85	35.61				
Serves as a role model for me				-12.96	-1.55	13.01	.145

(≠V) (Role Model)							
Formal	13	75.15	29.55				
Informal	66	88.12	13.57				
Is someone I identify with (Role Model)				-8.40	-1.21	77	.228
Formal	13	74.00	26.61				
Informal	66	82.40	22.02				

≠V = Equal Variance Not Assumed

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