

## CHAPTER 4

### RESULTS OF THE STUDY

*“Nobody can make you feel inferior  
without your consent.”  
Eleanor Roosevelt*

#### Overview

As discussed in Chapter 1, previous research conducted on minorities' persistence in math, science, and engineering has been quantitative in nature and has documented the importance of (a) traditional pre-enrollment academic variables, (b) family background variables, (c) individual variables, (d) environmental variables, and (e) support systems. This study was designed to examine the topic qualitatively and explore the following questions through the stories of African American and Caribbean Black males who have either persisted or failed to persist in a college of aeronautical science:

1. What experiences have been influential in a small group of Black males' selection of aeronautical science as a major, piloting as a career?
2. What factors outside of and previous to the collegial environment contribute to (and detract from) persistence in pursuit of completion of a major in piloting?
3. What factors in the collegial and occupational environment contribute to persistence in a major in piloting?
4. How do patterns of persistence compare for these Black males at a college of aeronautical science?

#### Emerging Themes and Codes

The biographical questionnaire, interview guide, and questioning route were organized in a developmental fashion, from the family background and events occurring in childhood to the present time. All individual and focus group interviews were coded. To make sense of the data, Miles and Huberman (1994), as well as Strauss (1987), recommend organizing those initial codes into themes, also known as categories, the goal of which is to look for patterns in the data. The data were allowed to emerge in an inductive manner similar to Graham's (1997) study; in other words, no prior assumptions

were made about the interrelationships among the data prior to the observation and analysis process. A special key was also utilized to identify study participants: AF = African American, CA = Caribbean Black, P = persister, N = non-persister, CS = current student. Codes 1 – 6 refer to participant numbers. For example, CAP2 refers to Caribbean Black Persister #2.

**Family Background:  
The Developmental Process**

For the persisters in this study, parental education, birth order, parents' philosophies and values, and family hardships and tragedies are among the host of family background variables that influenced the choice of aviation major and persistence in that major.

Parental Education/Role Models

In most cases of this small group of Black male aviation students, the lack of parental education and role models was viewed as an important missing link, for example:

I know that I haven't had anyone before me that has gone through aviation in my family or someone that I can personally relate to, so I feel like in order for me to feel confident about myself, and, at the same time, have the people reviewing my performance feel confident about me...I have to reassure myself so that I can do well. [CACs1]

My family did not have the previous experience to fall back on in order to pass on this knowledge to me. Therefore, I had to learn it the hard way, which means later rather than sooner. [CAP5]

If we as Black males could be around others [who] have excelled and succeeded, it would be easier on us...I never had a black professor for any aviation class and even the only time I saw anyone [was at] a Caribbean seminar, where they had some instructors come talk. We're like "we've never seen these people before"...they aren't really the role models, where you see people aspire to stuff and you feel like you can do it too. [AFN4]

Challenging! It takes a lot of effort [to overcome] a lot of obstacles. You don't have very many role models in the program...you don't have many people to look up to, or to go by. [CAP4]

Most participants in this study reported having few role models in the field and the Caribbean participants, in particular, had relatively low-educated parents. Reportedly, 26 of all 27 parents graduated with high school diplomas or equivalent, with 13 parents

possessing college degrees. Eleven of the parents with college degrees were African American. In one case, the parent of a Caribbean persister (CAP2) had less than a middle school education (see Appendix 8).

### Parents' Philosophies and Values

Participants were asked to identify their parents' philosophies on raising children, including the values they stressed as important and the greatest lessons they learned from their parents. The value of education was heavily stressed in almost all of these cases.

Said one African American persister:

They [my parents] believe strongly in pursuing an education. My mother continued over a number of years taking classes here and there until she received her teaching degree...my father use to take courses all the time and I think he eventually received an Associates Degree...my parents' basic philosophy was when you turn eighteen, you better go to school or military, because either way, you will be leaving this house. [AFP1]

Overwhelmingly, the raising of these children in the Caribbean black household was solely done by the mother. This was particularly interesting since 6 out of 8 were two-parent households. These parents of the Caribbean black participants reportedly stressed self-reliance and independence, while the African American parents stressed the importance of religion and faith and the simple difference between right and wrong. Additionally, these Caribbean parents' philosophies focused on the value of reciprocity in their immediate and extended families, as evidenced by their reliance on family members for financial assistance. For example, one participant [CAP2] reported that his siblings took turns in sending him money on a monthly basis.

Most of these Caribbean black participants tended to stress a respect for elders and authority figures as a significant part of their rearing. These philosophies and values have reportedly had a tremendous impact on every aspect of the participants' lives in general, and their persistence in their aviation majors in particular.

### Family Hardships

Several of the Caribbean black males described family hardships and tragedies and the impact those hardships have had on their motivation to be successful in life and their ability to deal with barriers and obstacles they have encountered with the climate of

aviation. Participant CAP5 described the divorce of his parents and the effect it had on his persistence:

My parents getting a divorce made me more determined to get an education and succeed. There were times when being poor seemed a step above me. But I refused to let on. When I think back...the borrowed books, borrowed shoes and borrowed food...Wow! [CAP5]

Another participant [CAP6] talked about his hardships and the early childhood years in the rough neighborhood he survived:

They (ER faculty) don't know me or where I come from, what I've been through. I mean surviving what I went through even before college, I use to tell myself...I can survive and get through this and I did. [CAP6]

### **Individual Background**

In addition to family background variables, a couple of individual background variables, as reported by the participants, were influential in a nontraditional choice of major, including academic abilities and personality.

#### Personality

Participants were asked to describe their own personalities (see Appendix 9). Most persisters described themselves as competitive, assertive, motivated, determined, ambitious, independent, and a strong sense of self. The three participants [CAP2, CAP3, CACS3] that spoke about confidence in self were Caribbean blacks and when probed, all respondents indicated it was instilled by their mothers. While a few of the non-persisters' descriptions were much the same, two [AFN2, AFN3] described themselves as easy-going and laid back (non-competitive). These non-persisters did not respond well to the stress, pressure and competitiveness of their aviation programs.

The descriptions of persisters imply that they tend to be "Type A" personalities (Graham, 1997; Moore, 2000) in that they are competitive, they thrive on challenges, and respond to stress by working well under pressure. Whether these participants started out in life as having these qualities or whether they adapted along the way or in the program is unclear.

You definitely have to be strong willed and determined. The fact that it is the old boy network makes you competitive and aggressive. [AFP1]

I am a really independent person...partly due to the poor relationship with my stepfather. [CAP3]

I can be so competitive at times, at all things, I'm probably too competitive...[CAP5]

The persisters talked about themselves as being goal setters, that is, once they make something a goal, they are going to follow through no matter what. They believed that they could follow through and be resilient enough to avoid the influence of anyone who attempted to change their minds. According to most of the persisters, adversities that they reported experiencing, such as individual, environmental, or social barriers or obstacles, gave them all the more motivation to succeed and prove to themselves and others that they were capable of succeeding. While the persisters, both African American and Caribbean blacks had many similarities and the outcome (persisting through the program and becoming a pilot) was the same, the path to getting there or being motivated often appeared to be different. For example, one African American persister [AFP1] found his motivation in proving "them" wrong, while the following quotes from the Caribbean black males [CAP3, CAP5] indicate self-motivation.

Tell me, or act like I can't do something...then that just motivates me to prove you wrong. [AFP1]

Once I get it in my mind that this is what I want to do, I do it, no matter what it takes. That's just me. [CAP3]

Once I decide on something, on a goal, then that's what gets done. I do a lot of goal setting and more importantly, I do it. [CAP5]

### Academic Background

In a study of African American males and engineering, Moore (2000) found quantitative measures, such as math and science ability, grade point average, class rank, and SAT scores to be more influential in the actual choice of major and the admissions process rather than the ability and willingness to persist with the major choice. Since attention had already been given to these variables, this study was not primarily concerned with those pre-enrollment variables.

Appendix 10 lists the academic strengths and final high school grade point averages as recalled by all participants. However, in some cases, participants were

unable to recall their exact averages. Worth noting is the fact that African American and Caribbean black persisters and non-persisters had similar strengths and grade point averages.

#### Reasons for Choice of an Aeronautical Science Major

Participants were asked to discuss their personal reasons for choosing aeronautical science as a major and piloting as a career choice. Appendix 11 lists frequency counts and comments organized by categories. The reasons stated for an aviation major were diverse. Most of this small group of Black male participants mentioned the influencing of participating in special pre-college initiatives such as the Young Astronauts, Youth in Aviation, and Young Eagles.

Three of the African American males in this small group [AFCS1, AFP1, AFP4] were clearly gifted in math and science during the elementary and high school years. High aptitudes in these subject areas made aviation one of a number of logical choices of major. In other words, a number of the participants found their niches in math and science. Several participants, particularly Caribbean blacks, commented that they concentrated and excelled in math and science because they hated classes that involved a lot of reading and writing such as English. Such dislikes, again, made aviation one of a number of logical choices.

Perhaps as important as special programs and high aptitudes in math and science, it was discovered that interest and schools played a major role in influencing these Black males to pursue aviation. The majority of participants commented that they knew they wanted to be a pilot at an early age, because they were fascinated with airplanes, airports, and just simply flying any and everything around the house. As a result of their genuine interest, it was mentioned that they came into the College of Aeronautical Science with the attitude they were going to accomplish their lifelong dream – becoming a pilot. Their interest, in many ways, became the catalyst to do well in aviation.

Various components of schools were identified, such as teachers, advanced curricula, technical courses, and schools specializing in math and science. These different entities that make-up schools around the country were beneficial to many of the participants in the study. Some commented that their math and science teachers nurtured their problem-solving skill development and encouraged them to pursue something in

these areas. The mentioned schools were regarded as helpful in making their decisions to pursue aviation; they also attributed some of their success in the college of aeronautical science to these earlier educational experiences. An open-ended question pertaining to factors that contribute to Black males' decision to major in aviation evoked many responses:

#### *Special Programs and Exposure*

In like fourth and fifth grade, I was involved in the Young Astronauts program, where we met these astronauts, and they were military reserve pilots and aviation engineers... so I was like "oh, I want to be one of them," and since then aviation has been on my mind. [CAC5]

I did go to a Youth in Aviation program sponsored by the Tuskegee Airmen that they had here, and they helped too. They gave you an inside, old school view of piloting and all that they went through and still came through...Wow! [CAP3]

I didn't do any flying as a youth, however, when I was in high school, I was selected to participate in a program. It was an internship or apprenticeship back with NASA...it was ok. [AFN3]

I was introduced to flying when I was in the eighth grade through an aviation program. In fact, it was taught by Chief Anderson, one of the famous Tuskegee Airmen. This is when I determined I was going to be a pilot. [AFP1]

#### *Math/Science Aptitudes*

I've never had a great interest in math, but it was just something I was able to do with ease...[AFP1]

I was sectioned off in the high math classes and that's when I began to know...perhaps aviation was a good area to study in. [AFCS1]

I was good in math, perhaps it's in my genes, I don't know...but I was really strong in math when I was in high school. [AFP4]

#### *Family (Father)*

He [his father] was in the Air Force, and he was an aviation technician. So math and science, he was really into it, I think he wanted to be a pilot... I think that kind of had an effect on me. [AFCS1]

My dad more so than my mom...he started always to push all the children...He was always pushing us to do the best. My dad was a big influence in my life. [AFP1]

### *Family (Mother)*

Previous research on minority persistence fails to substantiate the role of the mothers in the education process of her children, as well as her influence on career choice and maintaining motivation. Mothers, many of whom were strong educators in the home, were reportedly the force behind many of these Black males.

I just talked to my mom last night about this test I had on Friday, and I was just telling her this test was hard. She was telling me the whole time “you can do it, you can do it,” and nobody else around here is going to tell me that and just the fact that she’s my mom and she has known me my whole life and knows what I’m capable of...reassures me that I can do it. [CACS3]

My mother is always there supporting me. She keeps telling me she wanted me to succeed, and lots of times I feel like I keep continuing in aviation because that’s what she wants me to do...[CACS5]

If it’s something I don’t understand, she [his mother] might take it to one of her friends. [CACS2]

She [his mom] told me, “do what you enjoy...flying, or whatever...go as far as you can...” She was tickled to death that I got a bachelor’s degree and licensing, but you know she says if I’m capable of doing more, making other options, she’s not going to have me settle...[CAP5]

My mom sends me biblical quotes every now and then. My mom is a little more insane about it [college] because she didn’t really go to school. [CACS4]

My mom tried everything to make sure I had all my supplies. [AFN1]

My mom called everyday. I think that she stayed up praying every single night, all night, when I pulled all-nighters. [CAP2]

### *Interests*

My love for airplanes... My love for flying anything around the house: cars, trucks, paper... I have kept that focus. [CAP2]

I’ve been interested in [flying] ever since I was a little kid. I’ve always wanted to do something with airplanes or in aviation. [CACS2]

### *Schools*

I would probably have to name my fifth grade teacher who really got me interested in math. I thought that, if flying had a lot to do with math, I was going to stick with it. [AFP4]

I've always been pretty good at math and science, but I guess for me it was when I was in high school and the Tuskegee Airmen always visited my school and spoke on an annual basis... I liked [them] so I stayed in contact...and well, the rest is history. [CAP6]

### *Structure of Opportunity*

The structure of opportunity, specifically the opportunity to get a job after graduation with high salary potential was very appealing to most participants, both persisters and non-persisters, as well as their parents. For example,

I've heard all my life that the way to go and the way to live comfortably without working a lot of hours is to be a pilot. [AFP1]

When I talk to students, I tell them consider traveling to the most exotic places, work a total of 2 weeks per month and make six figures in no time at all...that's why I am a pilot. [CAP3]

My mother is so proud to tell all her friends and church people that her son is a pilot...but she still refuses to fly, even with me in control. [AFP4]

Four study participants, all African American males (AFN1, AFN2, AFN3, AFN4), dropped out of aeronautical science, and ultimately pursued other majors. The decision to switch majors appeared to be less difficult in the two cases where participants had a parent's support than it was in the cases where the parents objected or disagreed with either the school or the change.

### *Role of High School Guidance Counselors*

Participants were asked what role their guidance counselors played in their knowledge of aviation or their choice to major in aeronautical science. Appendix 12 lists responses to this question, categorized by positive, neutral, and discouraging responses. In only one case did a counselor reportedly have a positive impact [AFP1]. In this case, the mother of the participant was a teacher in the same school system and reportedly known to be a very strong educator and mother.

In the majority of cases, counselors did not play a special role. Career guidance activities were limited to standardized testing that sometimes underestimated the potential of these Black male students. In general, counselors lacked knowledge about career opportunities in the math, science, and aviation professions.

### **The Culture and Climate of Aeronautical Science and Institutional Factors**

As Black males in non-traditional majors, most of the participants have had experiences that are like other Black males who experience college life. These experiences fall under the category of “The Freshman Year Experience.” However, the experiences of these participants, as well as other males in aviation majors, are very unlike those Black males in traditional majors. The differences can be attributed to enrollment in non-traditional majors and the culture and climate of aeronautical science education.

Several African American males in this study [AFP4, AFN2, AFN4] reported they felt faculty often perceived them as not having the potential to persist in aviation majors. It is unclear whether this is the real attitude of faculty or whether these participants are “jousting with shadows.” In other words, having a fight with a perception or expectation of discrimination.

Regardless of the individual situations and perceptions, what the participants did have in common was the constant pressure of feeling like they had to prove themselves in the college of aeronautical science. However, the Caribbean blacks’ comments centered around the program being difficult for all students, while the African Americans, both persisters and non-persisters reported that they worked harder to prove both to their white aviation classmates and professors that they belonged in aeronautical science and at Embry Riddle.

A lot of the professors think that freshman year you’re not capable of doing well... I mean it’s not as if there’s a big history of blacks excelling in aeronautical science or this school... so it’s like you don’t have the potential to do well... unless you show [professors] that you can... so you have to work harder to prove them wrong. [AFP1]

You have to deal with stereotypes... you push harder – a feeling that you have to perform better than anybody else. [focus group]

It would be a lot easier if there's no group work so you don't have to deal with the "BS" of having groups of [white] students who don't want to be in your group...[AFN2]]

When asked the question about experiences in the climate of aviation, the African American males reported incidents of isolation or being ignored, obstacles that they termed as hostile, discriminatory, or degrading. The Caribbean black males, on the other hand, seemingly faced the same obstacles and incidents and while reporting some frustration, the majority viewed these obstacles as "challenging, rewarding, and sometimes funny".

The perception of a stereotype threat on the part of the African American males appeared to influence all aspects of their lives. It often impacted their grades and confidence in a negative way. A rigorous and rigid academic program, the lack of academic preparation in terms of preparatory courses, and a perceived negative climate, in combination with normal development and adjustment issues was overwhelming for some of the African American participants in this study. Thereby, causing some to become discouraged, dissatisfied, and disengaged with the College of Aeronautical Science. So much so, that they decided to transfer to non-aviation majors. Those who did persist consciously sustained and/or developed positive attitudes, relationships, and academic strategies, which empowered them to persevere in spite of the challenges.

#### The Non-Traditional Major Experience

As non-traditional majors, most of the participants commented on the effects their majors and piloting careers have had on their experiences in general and attending Embry-Riddle in particular.

When I fly with a Captain I haven't flown with before and we get on the subject of training and I tell him I attended Embry-Riddle, its like "instant" respect. [CAP3]

The African American males especially felt while they were not the first in piloting, they were still a part of the pioneering movement in this field.

When you walk in that classroom and see that you are the only Black, yes, it affects you, but then you think if I can get through this, I can tell another brother or sister that they can to. [AFP4]

You do sort of feel like a pioneer, not like the Tuskegee Airmen who certainly paved the way, but because there are still so few of us in the profession today, you feel like the race is still being run and you're in there grabbing the baton. [AFP1]

Affirmative Action hiring practices also affect these non-traditional aviation majors who feel some ambivalence about the issue. Although these participants hope Affirmative Action will open some doors, they do not want to be perceived as being unqualified.

I hope it [Affirmative Action] can help get me a job, open the door - however, I don't want to think that's why I'm going to get the job. I want to get it because I deserve the job over any other applicants. [CACS2]

With more Black males entering majors and occupations traditionally held by White males, the nature of the work environment or organizational culture changes. White aviation professors are having to learn to teach Black aviation students. As stated by one participant:

When I was there [Embry-Riddle], a lot of the professors hadn't had that much experience dealing with [teaching] Black males, because there were so few of us in the program. I'm not sure that has changed since the field remains White-male dominated even today. [AFP4]

Two of the non-persisters (AFN1, AFN3) commented on the potential for racial discrimination in the workplace, for example:

There's so much that stems from racial discrimination, the routes you are given determines a lot...and like major salary differences. [AFN1]

Of course the industry discriminates...routes and the type of aircraft you fly determines your salary. I know Blacks are not given the best routes. [AFN3]

### The Freshman Year Experience in Aeronautical Science

Students who enter the aeronautical science program as first year students do not all enter with the same academic background, foundation in math and science, and exposure to computers. This perceived disadvantage for some African American non-persisters created a major roadblock to effective and successful performance. Not everyone "comes in running." For this reason, students sometimes get discouraged and leave the program, because they are competing with many students who come from private aviation programs and Science, Math and Technology (SMT) magnet schools. If

they don't leave out of discouragement, some still feel the effects of that lack of background.

The majority of participants in this study reported facing similar Freshman year issues of adjustment. However, most Caribbean black persisters attributed their issues of adjustment to self, not lack of background. As evidenced by the following quote, one Caribbean black male participant took a proactive role in dealing with his "adjustment":

My exposure to computers was "0" and all of a sudden, you are expected to know how to use one. Would you believe...I did not have a computer of my own, and it seemed like everyone else did. I had to run around, for practically a whole year, borrowing a computer to do my homework. [CAP6]

On the other hand, the following quote was made by an African American participant who failed to persist:

I came in at a disadvantage because I was not really introduced to the higher levels of math and science...that's for anyone...but you will probably find more Blacks than Whites in that situation. [AFN4]

Throughout the study, African American males tended to address the deficits in their background more often than Caribbean blacks. However, it was unclear whether more African American males possessed a higher deficit in math and science than Caribbean black males. Additionally, the African American participants reportedly saw themselves in constant competition with students from school systems with higher per pupil expenditures for resources, while Caribbean blacks competition reportedly was with self.

I never felt that I had the same kind of background as everyone else. For instance, my physics class was probably not as good...I just didn't know as much as everybody else did. [AFN2]

Most of the students reportedly lacked adequate study skills and study habits when they entered the aeronautical science program. As seemingly very bright and intelligent students, they have performed at a very high level with relatively little effort. Many of these participants commented on their lack of study skills in that they performed poorly for the first time or even earned their first "F" ever. As evidenced by the following quotes, the first "F" was processed differently for a Caribbean black participant

[CAP3] than an African American participant [AFN1]. The Caribbean participant graduated from the program while the African American changed his major and school.

Getting an “A” was a piece of cake for me. That’s why when I got an “F” I went into shock. I couldn’t believe it and neither could my parents. [CAP3]

I was frustrated...I had always done well in school, doing poorly was a wake up call for me so that’s probably why I chose another route. [AFN1]

The non-persisters (African American males) especially had a difficult time dealing with failure for the first time, whereas the persisters usually re-evaluated their study skills and habits, made adjustments accordingly, and gained a more realistic view of themselves and the confidence that they could persist.

As soon as I admitted that I didn’t know everything and accepted the fact that I now had to study, instead of shooting pool, I was ok. [CAP2]

The freshman year was a pivotal point for these Black male aviation students. In addition to weak backgrounds or poor study habits, the African American males, more so than the Caribbean black males, reported that they were somewhat intimidated by the “perceived” strength of their White peers. The Caribbean participants reportedly had no expectations of intimidation or discrimination, while the African American participants seemingly programmed themselves to expect it.

I never felt intimidated – I guess it exist - it’s probably something they use in the weeding out process, before you get here. I probably didn’t notice it. [CAP3]

Whenever I would ask a question, it seemed like everyone else already knew the answer. I felt like all my questions were beneath them [peers], it was somewhat intimidating to me. [AFN1]

While most of the African American participants confirmed that faculty themselves contributed to the intimidation through biased comments in the classroom, as evidenced in the following quote, one Caribbean black persister had his doubts about a faculty member:

In one of my classes, I heard a comment once that “Black men can’t fly”. Since where I come from, my first exposure to pilots were all Black men, I didn’t know how to take the comment. I later learned that this was a comment made about the Tuskegee Airmen back in the day and they now embrace the slogan, of course proving others wrong. But at the time, I didn’t find it funny. [CAP5]

When asked, the participant [CAP5] did not recall the context in which this statement was made in class, only that it provoked something within him. On the other hand, a statement made by faculty to an African American participant currently enrolled in the program [AFCS1], had a motivating effect on his performance.

I was told point blank in one of my classes that the drop out rate for African American students is very high so he hoped that I had an alternative. I guess that was to intimidate me, it didn't work...I'm still here and doing well. Friends told me to expect this kind of stuff...[AFCS1]

### Faculty

Most participants felt that a “professor could make it or break it for you.” Two participants [AFP1, CAP2] commented about good experiences with their professors being very helpful and supportive. There were a number of comments, mostly from African American males, regarding faculty that were negative, such as faculty being too busy, unapproachable, not flexible with hours and just didn't understand their “unique” problems. On the other hand, Caribbean black participants' comments regarding faculty were very limited or neutral.

Trying to schedule extra time with a professor was a challenge...although they always seem to have time for the other guys. [AFN2]

Yes...scheduling time with the professors was a bit difficult but then I really didn't try that hard...I got more out of conversing with my peers than the professors. [CAP2]

I remember after class sometimes, you would cluster in a group surrounding the professor to ask questions...one time, I asked a question and he responded as if I wasn't there, acknowledging everyone else in the conversation, but me. [AFN3]

Faculty...part of their job is to meet with you but they never have time. [AFCS1]

Rigid attitudes held by faculty and the “rules” of the aviation culture were reported by some as “turn offs”, particularly to those who changed to other majors.

You go by the rules...no exceptions, at least not for us [Blacks]. [AFN1]

There are these rules that we [Blacks] either didn't know or weren't told. [AFN2]

Oh, it's definitely a structured curriculum. You have to do it this way...creative people need not reply. [AFCS1]

Although most of the non-persisters switched their majors to other non-traditional majors, (e.g., aerospace management, law, computer science) their perceptions of the climate in their new majors were more positive. They reported their new majors to be friendly and less hostile. Worth noting is that 3 of the 4 non-persisters switched to a HBCU and persisted.

### The Classroom Climate

The experience of being the only Black (tokenism) was an experience shared by all of the participants; for a few, particularly the African Americans, it was perceived as adding on more stress.

It's difficult enough just being in the major. But yes, I would agree that when you have no one else like you there, it's hard to relate at times. [CAP3]

When you're the only one...there are times when you start to think that maybe you shouldn't be there...and being the only one, you don't have anyone like you to talk to during those times. [AFP1]

As I think back, I really didn't talk in class...usually, everyone else was talking...asking questions. [AFP4]

Perhaps being the only one...I was a bit quieter than usual. [AFN3]

I knew coming in that [being the only one] was a high probability. Didn't really bother me, didn't care if it bothered them. [CAP6]

One participant [CAP3] felt that he was ignored or discounted in classes:

Funny...I don't recall a professor even looking me in the eye. It seems they were pretty much directing everything towards the other guys. [CAP3]

As previously discussed, students enter the program without the same foundation and academic background. Although this can be frustrating for an instructor, faculty often discouraged or ignored students who were working below the average for the class.

The instructors were arrogant. If you didn't know something or get it on the first try, then they felt you didn't belong there. [AFN1]

Well...part of it was my fault...I probably should have spent more time reaching out to the professors, but then they had this whole discouraging attitude if you needed extra help. [AFN2]

I started making them [Instructors] notice me. I was always in their face after class asking questions. Hindsight...it worked. [AFP1]

### Weeding Out Process

Several participants commented on the difficulty they had getting used to the expectations of their instructors. The first two years of aeronautical science study are considered to be “weed-out” years. While most participants commented on this process, most of the African Americans questioned its purpose. According to Moore (2000), one could hypothesize that the phenomenon (weed-out process) relates to the culture of study, that is, if aviation instructors have this “elitist notion that they are superior” to other majors and disciplines, then naturally the members of that culture might attempt to weed out the students who don’t meet their expectations, who aren’t worthy of being in that elitist group by their standards of admission.

While all participants assumed and accepted the fact that aviation study was difficult, some believed faculty made it more difficult than necessary to “weed out” students.

I don’t think the instructors knew the answers to some of the problems they gave us. I just felt they just wanted to be difficult. [CAP3]

You knew the first courses were to weed people out. Nothing was straightforward; you just had to figure it out. [AFP4]

I only wished they had made the admissions process more difficult, that way I wouldn’t have wasted two years of my life. [AFN1]

Although some talked about problems with the system, over time, most persisters began to understand the weeding out process, perhaps through a process of indoctrination into the culture.

Trust me...it’s [weeding out] good experience and an introduction of what’s to come in the industry. [AFP4]

I basically agree with the process. I don’t want the standards lowered just to include me or anyone else. If you prove you are capable, then you deserve to be there. [CAP2]

### Peer Association

During a focus group session, many participants commented on the attitudes of

their peers in aeronautical science, particularly in the first year.

Yeah...this group work gets to me sometimes, you know that they don't want you in their group like you're going to bring down the project. [focus group]

I remember one time in class I was sitting there in physiology and the teacher was like, "We're going to try to get into groups of four to do this project," and everyone around me turned their backs to form their groups. [focus group]

There are a lot of all-white study groups in my classes but if you're Black, it's hard to get into them. What's so funny is that I know I could bring more to the table than half of them in the group. [focus group]

I look at it a little differently...I let them all form their groups and then I look around and see which group I think is the smartest, and then I go sit down and join them. [focus group]

### **Sources of Support**

Participants were asked to describe the sources of support they utilized during their program. These sources included family, peer networking, engaging professors, campus organizations, and faith. While persisters often mentioned an on-campus support group, religion, peers, and faculty, most of the non-persisters received no support or left the program without seeking help or support. Additionally, all Caribbean black participants of this study credit the Caribbean Student Network (CSN) as being a major factor in their persistence.

#### Family

Overwhelmingly, participants' families were sources of support. Supportive parent(s) provided listening ears, empathetic understanding, unconditional love and acceptance, encouragement, and advice. Parental support was previously detailed in the section on Reasons for Choice, subsection Family.

#### Peer Networking

Most persisters also relied on peer networking. They talked about the advantages of having friends within their majors. Whether they purposely chose these friendships or whether the friendships developed because they were together all the time was unclear.

I think it's not just how well you do in a class, there's still outside factors – your social life as far as the people you hang with...It's not strictly being book smart all the time. I think it's your social environment, [and] the way you interact with students in the class. [focus group]

If you can't adapt socially to the culture that's already here or if you can't talk to the people that are aviators that are White or Asian or whatever, then academically you can't succeed. I mean – I don't see how you can succeed [focus group]

You got to build a network of people in class, people in your major at least... You have to do that, especially if you're not doing well. [CAP2]

Basically, what is needed is to network with other students and older students. [focus group]

After my near probation experience... I had to start branching out and networking with the White people and so forth. I needed a study group to survive. [AFP4]

### Engaging Professors

When students begin their first year studies with supportive faculty in a positive climate, it can make all the difference in terms of emotional health and academic performance. Three of the persisters [AFP1, CAP2, CAP6] reported having a positive experience with their professors. Unfortunately, the African American non-persisters commented that no one in the aeronautical science program had been supportive of them.

The following quotes made by a Caribbean black male [CAP2] and an African American male [AFN1] clearly illustrate the differences in performance exhibited throughout this study between the two groups, when faced with the same situation:

Quite a few professors' grades are subjective and not objective and although some people may think that's unfair, [but] that's how the academic game is played... I use to go see my professors and ask them what I would need to do to get better grades and they were willing to help because they knew I was sincerely trying to learn more and get a better grade in their class. [CAP2]

Yes... I guess you could say that some of my isolation was self-inflicted – but when you are basically battling everyone else in the class because of grades, and then you are battling the professor because he or she may not believe you are capable... you tend to shut down. [AFN1]

Although failing to take advantage while in the program, one non-persister [AFN2], recognizes its value in the following quote:

I now know that you have to take advantage of your resources and opportunities like faculty office hours and prodding for more points on tests. I wish someone had told me this then. [AFN2]

A Caribbean black male participant sums up his view on engaging professors with the following comment:

Make it a point that the professor knows who you are...you want them to know you... have confidence in you - it takes all of two weeks that they know your name, where you're from, who you used to date last year...it doesn't take much because you're usually the only one [Black]. Their confidence can keep you going. [CAP3]

### Campus Organizations

Over the years, campus services and organizations organized by minorities to address minority issues have grown. However, the primary supportive organization, especially for Caribbean black persisters, has been the Caribbean Student Network (CSN). One of the African American persisters [AFCS1] has also been active with the CSN. With the chartering of Black fraternities and sororities, Black males report that they have improved their time management and study skills through programs provided by these organizations featuring help sessions, tutoring, mentoring, and general support.

Although most of the persisters in this study had graduated from Embry-Riddle prior to these formal programs being in place, several of the Caribbean black males recognizing its importance, now serve as mentors for minority aviation students at Embry-Riddle.

I really enjoy being a mentor ...I remind students every chance I get of all the perks and benefits associated with being a pilot. I tell them to get on board and take advantage of it. [CAP3]

I go back to Embry once or twice during the school year as a mentor/role model. I'm usually a guest speaker at a seminar or helping the CSN to coordinate a program. [CAP2]

Back when I was at Riddle, the only thing social for a Black student was a lounge, unless you were in good with the professors – going to their homes. [AFP4]

I pledged XYZ fraternity last Spring, and my social life has dramatically improved, I now have “brothers” at the university down the street and having people to hang out with...its nice not always having to talk aviation. The “frat” actually helps me to stay balanced. [AFCS1]

## Faith

As previously mentioned, a qualitative paradigm provides the opportunity to be flexible with the interview guide. Most literature on persistence does not address the role, if any, faith has on persistence. However, faith was another factor mentioned by these participants that helped them persist through aviation. Some commented on how prayer helped them get through tough times (e.g., examinations and courses). African American males, in particular, relied on their faith many times to bring them through their struggles.

I pray. I really pray a lot, all the time, you know. When I talk to my mom and she can tell I'm a little down...she starts praying on the phone. [focus group]

If there is nothing or no one else, there is the faith. Everything is going to be all right. [AFP1]

I know my faith. I wouldn't be anywhere without it...I don't know how many times I've been down on my knees asking for strength to get through this test, get through this class, or whatever. [AFCS1]

Oh ...I know my faith in God kept me going. Kept me out of the pool hall in Daytona as well. [CAP2]

I was always on the edge at Embry-Riddle. I did more praying in those years. I know God got me through because I couldn't have made it on my own. [AFP4]

If it wasn't for God in my life, I have no idea where or what I would be today. When things didn't work out at Embry, my mom use to say to put it in God's hands and so I did. [AFN1]

### **African American Male and Caribbean Black Male Issues**

#### African American Male Aeronautical Science Students

The majority of African American male participants [non-persisters] in this study appeared to be unhappy with the university's environment, faculty, perceived racism, and their peers. Therefore, institutional fit was a major issue for them. Following are comments made about the predominantly white university:

Embry-Riddle has all the culture in the world if you're White and blue-eyed. But, if you're Black, there's nothing for you to do. [AFN1]

The biggest problem I had with Daytona is the fact that there is no [cultural] foundation, not only for African American students but Indian students, Chinese

students [or] whatever student it may be. You're so limited that it makes you not want to be there. [AFN2]

While there is stuff to do...it is definitely not geared toward minorities.[AFCS1]

Historically there haven't been many African American males, both students and faculty, in aviation disciplines at the College of Aeronautical Science. Therefore, African American male aviation students haven't had the opportunity to network with other African American students the way that Caucasian students, particularly males in aviation, network with each other. Although the same can be said for the Caribbean blacks, their total number of students outnumber African Americans 2 to 1 at Embry-Riddle.

African American males who were unable to network in their own departments often networked with the Organization of Black Airline Pilots (OBAP) or the Tuskegee Airmen, Inc. (TAI). Networking with members of these organizations provided the opportunity to seek help with academics, talk about problems and concerns, and talk about solutions to those problems and concerns.

It's a lot easier knowing you're not alone in this struggle. When I attended my first convention of OBAP and Tuskegee Airmen, and saw all those Black pilots, hundreds of them who had made it...it made a big difference [AFCS1]

I know that I am still here because of the support of OBAP. That support system is very important. [focus group]

### Caribbean Black Male Aeronautical Science Students

There are many distinct subcultures stemming from African descent. Likewise, the persisters who participated in the study come from very diverse backgrounds. However, despite those backgrounds, there were many similarities and many differences in perception and performance.

These Caribbean black male participants commented on their families' high expectations of them in terms of academic performance. All of the Caribbean black male participants echoed a common theme that "failure was simply not an option" for them. As Caribbean black males in the program, and life in general, they did not subscribe to the notion that they were "minorities." As Black males in aviation they had been one of very few Black males in the classroom. They perceived the definition of "minority" as

applying to either African American or Hispanic ethnicity. The fact that society (peers) may view them as a minority did not appear to have an affect on them in general, nor their performance in the program in particular. Throughout the study, the Caribbean black participants, unlike the African American participants, did not put emphasis on the perceived “power” of Whites. To do so, said one Caribbean black participant [CAP2], would confirm this “so-called” second class citizenry.

### **Summary**

This chapter discussed from a developmental perspective the individual, family, academic, environmental, social factors, and experiences that have impacted the personal and professional lives of eleven persisters and four non-persisters (8 Caribbean black and 7 African American males) in an aeronautical science major.

Additionally, this chapter discussed the differences in perceptions and experiences amongst the African American and Caribbean black participants, as well as common experiences. For example, the Caribbean blacks in this study rarely attributed obstacles or barriers relating to aviation education to racism; in fact, in a focused effort to accomplish their goal of persisting, it appeared that this group of Black males were able to “put race aside,” theirs as well as that of others.

Chapter 5 provides a summary of these findings, profiles of persisters and non-persisters, conclusions, suggestions for future research, and recommendations for parents, school systems, and aeronautical science programs.

## CHAPTER 5

### SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

*The main difference between people who succeed and people who fail is how they handle adversity. Success will depend primarily on determination to persist.”*  
*Landis, 1991*

#### **Overview of the Study**

The purpose of this qualitative study was to examine the performance of a small group of Black males' persistence in a College of Aeronautical Science, a major traditionally dominated by White males. Through a social learning theoretical approach, the study investigated the relevant factors, processes, and experiences involved in these Black males' choice of aeronautical science as a major as well as their persistence in that choice. A conceptualization of academic persistence of these Black male students is presented to explain the variables that enhanced and inhibited the persistence of African American and Caribbean black males in the College of Aeronautical Science. In addition to their ways of persisting, this study also contributed further to an understanding of this small group of Black males' experiences in the culture and climate of aviation education and differences and similarities in perceptions among African American and Caribbean black males.

Previous research has demonstrated the importance of family background factors such as parental education and occupational levels and individual factors such as academic background, self-efficacy, and personality. A growing body of knowledge has suggested the effect of environmental and social factors such as institutional fit, the climate and culture of math and science education, and social networks and support for persistence. Many of these studies have used a combined sample of men and women while others have made comparisons between men and women on various variables. Studies have also considered differences in persistence rates among various ethnic groups. Women and African American minority students, in particular, have been found to persist at lower rates than White males. No prior studies have looked at the phenomenon of persistence from the perspectives of these participants, that is, African American and Caribbean black males who persist or fail to persist in a College of Aeronautical Science.

Since the dropout rate at Embry-Riddle (which is similar to that at other higher educational institutes) has demonstrated lower persistence rates for Black males than White males, this study sought to understand why Black males at Embry-Riddle persist at lower rates by incorporating the voices of both persisters and non-persisters. The study also considered the differences in how African American males and Caribbean black males perceived and acted upon the same experiences.

Qualitative methodology included both individual in-depth interviews and small focus group interviews, which resembled small group conversations. The data were collected in the spring and summer, 2000 and fall, 2001. The experiences of 15 Black males, including 3 African American persisters, 8 Caribbean black persisters, and 4 non-persisters were investigated. The non-persisters were all African American. Factors that seemed relevant to persistence and non-persistence were family background variables, individual variables, environmental factors in the culture of aviation education, and social factors. While persisters and non-persisters had no clear cut profiles, one group of persisters [Caribbean black males] made early decisions and stayed the course through academic preparation and a solid support system, both on and off campus. The personalities of the group of non-persisters (all African American), did not provide a good fit with the culture of aviation. Perceptions and experiences with the institution itself and the culture of aeronautical science education varied amongst the persisters, non-persisters and current students.

## **Summary of Findings**

### Data Collection and Analysis

The initial pilot interview resulted in revisions and clarifications to several questions in the semi-structured interview guide. Flexibility and spontaneity with the interview guide allowed for more in-depth probing into personal experiences and stories. An alternate scheme of interview with the African American males and Caribbean black males provided the opportunity to explore issues raised in the interview as well. This worked very well as there were issues and experiences common to individuals within these groups. Furthermore, if a participant mentioned an experience that needed to be explored with other participants, a question was added to the next interview guide. For example, when asking about support systems, the first African American participant

mentioned the role his faith had played in his persistence. In subsequent interviews, the question “what role has faith played, if any, in your persistence in aeronautical science?” was added to the interview guide. It was discovered that the role of faith had been very significant for many of the participants.

### Family Background

Regarding family background, these participants, persisters as well as non-persisters, have very diverse individual and family backgrounds. Parental educational levels ranged from middle school all the way to professional degrees, thus the socioeconomic levels and financial situations of these participants varied considerably. They also varied considerably both among and within the African American and Caribbean black participants. Many of the participants overcame tremendous obstacles to get to the present point in their education. These obstacles included severe financial problems, family tragedies and hardships, and inadequate academic preparation.

Parents’ occupations ranged from homemaking to semi-skilled to teaching to technical professional occupations. In many cases, most particularly with the Caribbean black males, they reported that their influential figure was their mother. In fact, those participants with strong mothers who stressed the value of education and encouraged them to do well academically attributed much of their success to their mothers. While many of the Caribbean black participants reported that their mothers wanted them to make a better life than they had, most African American participants reported some parental pressure in choosing a career to either maintain the lifestyles they were accustomed to or to better it.

The parents of these participants, as well as the cultures in which they were raised, influenced these participants through values and philosophies about life, including the importance of education, self-sufficiency, a strong work ethic, and a balance between home and work. All participants placed value on faith and belief in God, family cohesion and reciprocity. Additionally, the Caribbean black participants mentioned the value of respect for authority and elders. In the opinions of both the persister and non-persister participants, their beliefs have had an impact on who they have become and the paths they have chosen.

### Non-traditional Choice of Major

Regarding the non-traditional choice of major, the participants' primary reasons were structure of opportunity, math and science ability, and exposure and hands-on experiences. When asked about the roles their middle school and high school teachers and guidance counselors had on their choice of major, the responses fell under the headings of lack of knowledge, negative or neutral. A few participants did mention their guidance counselor assisting with admissions and application processes.

### Experiences in the Culture of Aviation Education

Experiences with aviation education in the first year were dependent in part on the assigned instructor and the participant's individual fit with the environment, as well as individual factors such as academic background, study habits and personality. While some faculty were reportedly very supportive, comments by African Americans were made about many others that they perceived as letting their biased attitudes about Blacks in aviation spill over into the classroom; comments such as, "He's [the professor] going to assume to know your background...single parent at home, SATs are iffy, and probably good in sports", and "you have to dispel the beliefs of some of these professors by proving you belong in the school, in his class and then you have to prove you can do well in his class, and you know...you're working two or three times as hard in the same class versus someone else."

Negative perceptions, as previously mentioned in Chapter IV, on the part of some participants, made a challenging field even more challenging. However, most of the participants, persistent and non-persistent, indicated that they were motivated, in some way, by the challenges. The most significant difference was how the Caribbean black males and the African American males perceived these challenges. The Caribbean blacks were proactive – they reportedly made sacrifices (limited extra-curricular activities), studied harder and more often, and were confident that their actions secured their place in the aeronautical science program and at Embry-Riddle. Several Caribbean black participants did comment that some of the challenges were likely racially motivated; however, one participant [CAP2] summed it up by saying, "in order to get through this program, you, [Black or White], have to make some sacrifices and dedication."

Consistently, persisters had the attitude that everyone in the program, in order to graduate, had to overcome challenges, period.

On the other hand, the African American non-persisters repeatedly said they felt like they had to always prove themselves. They perceived most of the challenges as not only being negative but an extra “burden” they felt was unfair. This group, which eventually transferred out of aeronautical science and Embry-Riddle, made comments such as, “most of the faculty and people there saw Blacks as underachievers when it comes to education,” and, “of course its isolation, if you are openly excluded from class and study groups, and the professor knows its happening.” The non-persisters in this study were generally unhappy with the area and the Caucasian student population. When asked about having to prove themselves in another major, most agreed that they did have to prove themselves, but that it was different. All four non-persisters in aeronautical science subsequently persisted in another field, 3 out of 4 earning their degree(s) from HBCUs. One participant has earned a law degree with an emphasis in aviation management.

Ultimately, the persisters in this study viewed the challenges as “needed” preparation for a career in piloting. For the non-persisters, they perceived these challenges as creating yet another burden or obstacle for them to overcome.

### **Answers to the Questions Guiding the Study**

#### **Research Question (1)**

*What experiences have been influential in a small group of Black males’ selection of aeronautical science as a major, piloting as a career?*

Family and individual variables were both influential factors leading to a choice of aeronautical science as a major. Relevant family variables included parental education, cultural factors and parental philosophies and values, role models and family hardships and tragedies. Relevant individual variables included personality and academic variables. The stated reasons for choice of aeronautical science as a major included the structure of opportunity provided by aviation degrees (e.g., securing a high-paying job as a pilot), formal and informal hands-on experiences and exposure to aviation, and math and science ability, among others. While high school counselors and teachers reportedly

played a very limited role in the career choice, several participants reported they were most influential in helping with college applications and admissions.

### **Research Question (2)**

*What factors outside of and previous to the collegial environment contribute to (and detract from) persistence in pursuit of completion of a major in piloting?*

Persistence was discovered to be a complex phenomenon involving individual, educational, social and environmental factors, many of which have been discussed; however, in terms of individual factors, personality was a prominent factor in persistence. Whether participants' personality traits were innate or learned is unclear; however, there were some indications that life experiences had contributed to personality development. In many cases, personality, culture and a strong support system provided the impetus to persist. From a very early age, the majority of the Caribbean participants' mothers were very active in their lives, reportedly developing their problem-solving skills through life's experiences. A significant number of the African American participants' fathers were considered sources of inspiration. Participants who had attended TAI or OBAP's youth aviation programs commented on its contribution to their persistence. In terms of academic preparation, most participants had excelled in high school math and science, in spite of the fact that they lacked routine study habits.

Several participants, persisters and non-persisters who were employed, commented on how their employment was a distraction, making it difficult to get help from professors when needed. Caribbean black male persisters relied heavily on peer networking, mainly through CSN for support. Perceptions and expectations of discrimination played a major role in pursuit of completion for the African American participants. As African American males, they have also dealt with a "good old boys' network" which creates differences in communication, styles of interaction, and personality preferences and patterns.

### **Research Question (3)**

*What factors in the collegial and occupational environment contribute to persistence in a major in piloting?*

Hands-on experience with aviation and seeing the big picture of piloting were mentioned by most persisters as strong contributors to their persistence. The expectation to succeed, long and short term goals throughout the program, familiarity with resources, both collegial and occupational, and willingness to use them, as well as industry and work related experiences provided the impetus to persist in many cases. One prominent academic strategy had been to learn to play the system. Factors mentioned by persisters as contributing to their persistence and occupational success involved establishing lasting relationships with faculty, staff, peers, and friends. As previously discussed, the Caribbean black males relied heavily on the CSN to bridge any gaps in communication and tutoring and to offer much needed support through the “weed out” process.

#### **Research Question (4)**

*How do patterns of persistence compare for these Black males at a College of Aeronautical Science?*

Persisters fit two patterns, that is early deciders – mainly the Caribbean blacks - (making the decision as early as middle school about their major) and emergers – mainly African American participants - (made later decisions about major often as a result of encouragement from a family member or others). The persisters demonstrated a process of being resourceful individuals. For example, prior to purchasing a used computer in his sophomore year, one Caribbean black participant would run around campus borrowing a computer to do his assignments; oftentimes he had to wait long hours before being able to use a classmate’s system. The Caribbean participants exhibited a strong sense of self and purpose and subscribed to the notion that “failure was not an option.” These persisters have also learned how to play the system, for example, they have learned which instructors to avoid by listening to the experiences of other students. Additionally, they learned to set goals and achieve them, how to find and utilize on and off campus sources of support, including other students, faculty, staff, family and friends, how to network with organizations such as the Tuskegee Airmen and the Organization of Black Airline Pilots, and how to be adaptable. In terms of personality, the Caribbean persisters were motivated by obstacles and barriers in their environments. By all accounts, the active and on-campus group - CSN, predominantly comprised of Caribbean blacks - provided proven strategies of persistence. CSN featured seminars, role models, daily tutoring and

mentoring, and an extended family environment. The persistent Caribbean black males in this study have had to “put race aside” in a realization that all aeronautical science students are struggling.

African American non-persisters, likewise fit two patterns, including a poor environmental fit (those who probably should never have been aeronautical science majors) and circumstantial (those who probably could have made it given different circumstances). In the latter group, I detected a few regrets about leaving aeronautical science. While the non-persisters ultimately accepted responsibility and/or blamed themselves for their poor performance in aeronautical science, they also blamed the culture and climate in aviation education. One non-persister said his primary reason for departure was the lack of finances, while he was certain he could have improved his grades, he simply could not afford to stay in the program. The African American non-persisters in this study often commented that they were not able to cross racial barriers, were not included in much needed study sessions and groups, that they felt isolated, and not having a faculty member that “looked like them” contributed to their lack of interest in aviation. All African American non-persisters in this study ultimately earned their degrees, mostly from HBCUs. Most in this group still felt that their “prove them wrong” attitude was justified and warranted at the College of Aeronautical Science.

### **Discussion**

African American students expect discrimination – sometimes incorrectly and sometimes not – and this expectation (in the heads of the students) tends to produce withdrawal, fear, submission, and self-contempt. If parents say “you can do it”, that helps but it may not be enough because fear is still there. However, if parents give lots of support, the strength of the confidence may be enough to match the power of the fear.

The Caribbean black students, on the other hand (for cultural reasons), do not necessarily have more confidence in self than the African American students, but they may hold weaker expectations of the power of Whites. Said one Caribbean participant, “to allow my destiny [graduate or not], to be in someone else’s hands [Whites], would mean I am no longer in control, that I have turned over control to them...something I am not willing to do.” The Caribbean black males in this study may have learned how to discriminate between situations of racial danger (discrimination) and situations in which

Whites are not stereotyping them. The expectations of discrimination is much weaker for Caribbean blacks in this study and does not produce fear (it is below the threshold for fear), thereby, making their self confidence more effective.

Table 5.1 outlines responses to particular interview topics and illustrates some of the patterns of persistence for these Caribbean black and African American male participants.

**Table 5.1** *Patterns of Persistence*

<b>Interview Topic</b>	<b>Caribbean black males</b>	<b>African American males</b>
<b>Role Models</b>	My family did not have the previous experience to fall back on in order to pass on this knowledge, so I had to work for it.	If we as Black males could be around others...it would be easier on us.
<b>Early Exposure to Aviation</b>	I did go to a Youth in Aviation program sponsored by TAI...	I didn't do any flying as a youth...
<b>Academic Preparation</b>	I did not have a computer of my own...I had to run around borrowing one for a whole year.	I came in at a disadvantage because I was not introduced to the higher levels.
<b>Attitude Regarding Grades</b>	When I got an "F" it was a wake up call to do better.	Getting my first "F" was a wake up call, I was frustrated, so I left.
<b>Interactions w/Peers</b>	I never felt intimidated, if it happened, I probably didn't notice it.	I felt like all my questions were beneath them, it was somewhat intimidating.
<b>Interaction w/Faculty</b>	Scheduling time with a professor was a bit difficult...anyway, I got more out of conversing with my peers.	Scheduling time with a professor was a challenge, although they always had time for the [other] guy.
<b>Minority Status</b>	I knew that being the only one was a high probability...didn't bother me.	When you're the only one, there are times when you think you shouldn't be there.
<b>Attitude Towards Study Groups</b>	I let them all form their groups, then I look around and pick the group I want to be in.	There are a lot of all-White study groups, but if you are Black, it's hard to get into them.
<b>Academic Competition</b>	Professors' grades are subjective, that is just how the academic game is played.	When you are battling everyone else in the class for grades, you tend to shut down at some point.

In the data collection, analysis and write-up, I was inspired by the strengths and stories of these Black males, and I am finishing the dissertation process with the opinion that the persister participants have taken the baton handed them from pioneers such as the Tuskegee Airmen, (African American aviators who forged a path for integrating military flight crews). Although not faced with having to overcome the tremendous obstacles of that era, these persisters do think of themselves as trail blazers forging a path for the next generation of Black male airline pilots.

These participants were very frank and vocal about their experiences. Several participants, mainly the African American non-persisters, were very vocal about their negative experiences with the aviation culture and very subdued about those experiences that were more positive. Even so, their stories should not be discounted. There does appear to be a clear gap in the perceptions of African American male students and Caribbean black male students about the culture and climate of aviation. Although data were subject to the error of reminiscence, it did provide evidence of a perception of a chilly climate for Black males in aeronautical science at this particular institution. African American males, in particular, recalled other African American friends and acquaintances who had either left aeronautical science and transferred to other departments or who had left the university altogether after reporting experiencing the negative climate. Even those participants whose experiences had been more positive could recall a negative story of a friend or acquaintance.

Worth noting as well are the emotions that were often elicited through the interview process, both my own and those of the participants. As previously mentioned, some participants had dealt with individual and family hardships and tragedies. Non-persisters, in particular, often became somewhat emotional in the recollection of their experiences with the aviation culture and their decision to leave their aeronautical science majors.

These persisters and non-persisters had no clear cut distinguishing profile. As previously mentioned, persistence is a complex phenomenon which involves the interaction of many variables. The persistent Black males (both Caribbean and African American) in this study were able to persist through the challenges in the College of Aeronautical Science because of their strong self confidence and their unwavering certainty that they could and would complete the qualifications for the aeronautical science degree at Embry-Riddle. At an early age, the vast majority of these participants commented that they wanted to become pilots; therefore, failing was not an option. These individuals saw themselves fulfilling a lifelong dream, and they were willing to do whatever was necessary to complete their aeronautical science degrees in order that they might become pilots. The “prove them wrong” attitude on behalf of the African American persisters was one of many underpinnings that propelled them to persist. Other

factors such as a strong support group, family (mother), faith, obtaining a good-paying job, and being role models for siblings and others served as motivators to persist.

The individuals categorized as non-persisters in this study were unable or unwilling to persist because (a) they were tired of the perceived hostile and competitive atmosphere in the College of Aeronautical Science; (b) they were frustrated with not doing well academically; (c) they became uninterested in the content; (d) they realized that aeronautical science was not for them and/or (e) they lacked adequate funding. Two of the participants in this group commented on not having a sense of what aviation really entailed before matriculating in the College of Aeronautical Science. These individuals opted to major in aeronautical science because people told them they would make a “good” pilot because of their technical aptitudes. Regardless of their reason(s) for transferring out of aeronautical science and this particular predominantly white institute, they appeared to be happy with their degrees obtained from HBCUs and doing relatively well in their careers.

According to Embry-Riddle’s statistics, Caribbean black male non-persisters are extremely small in numbers, however, if one had been located and included in this study, there is no reason to suspect that the patterns for Caribbean non-persisters would be different from Caribbean black male persisters in the college of aeronautical science.

### **Recommendations**

The findings of this study indicate some recommendations for Embry-Riddle, parents, programs, faculty and industry in order to increase the number of Black males persisting in the college of aeronautical science. A concerted effort from all sides (e.g., school, parental, airline industry, faculty, support groups) may be required. Since these Black males were telling their own stories, about their own personal experiences, they were given the opportunity in the study procedures to make their own recommendations for exposing and encouraging Black males to aviation, as well as recommendations for retaining Black male aviation students in their aeronautical science programs. Many of the following recommendations came from the mouths of those who have lived the experience.

### Recommendations for Embry-Riddle

The need for early interventions is essential. The university should recognize and embrace diversity within the Black culture. Persisters made it in spite of the obstacles, however, the university should take a proactive stance to break down these obstacles and students should be helped in overcoming them. For example, providing structure for study groups as well as a more inclusive support system. Provide “symbolic” financial support, in other words, full tuition support to Black males who meet certain established and written criteria. Findings indicate groups, such as the Caribbean Student Network, play a vital role in the persistence of Black males at the College of Aeronautical Science. Groups such as these should be established and sanctioned by the university. Additionally, counseling should be provided to faculty and students relating to race issues, sensitivity, and addressing the needs of this membership group. Lastly, it is highly recommended that Embry-Riddle hire more Black faculty members and advisors.

### Recommendations for Parents

Parental involvement in a child’s education is crucial. Parents and teachers should be partners in the education of children. Parents should be advocates for their children by ensuring the latest technology, hands-on learning and vocational programs in the system. Lent, et al (1987), provides descriptions of programs involving both parents and children, such as “Operation Smart” (Science, Math, and Relevant Technology), “Family Math,” and “Family Science.” These programs involve cooperative problem solving and appreciation and comfort with the applications of math and science.

Occupational interests are developed through hands-on experience and education. Providing early hands-on exposure to aviation through such programs as Youth in Aviation, Young Eagles, and Ace Projects are avenues for promoting this career choice. Worth noting is that there is minimal cost associated on the part of the family and student as these programs are generally sponsored through industry organizations. Younger children should be exposed to a wide variety and balance of extracurricular activities as well as math, science, and technology in the schools and in the home.

Racial identity issues were mentioned by most of the African American participants in this study. From an early age, parents should help African American males develop a positive racial identity as “African American males”, by teaching them

to have a great sense of pride in their cultural identity. Counseling (at various levels) may also be necessary, with a focus on how to resist the debilitating effects of an expectation of bias. Participants often mentioned that they did not want to let their parents down by not doing well in school. Therefore, parents should set high expectations for their children academically and for life in general.

#### Recommendations for Programs

The Caribbean participants cited CSN's programs as being influential in inspiring them to persist in aeronautical science. CSN and other entities in and around campus (e.g., Black Fraternities) should collaborate to develop initiatives specifically for Black males. These initiatives should be designed to challenge, encourage, motivate, and nurture Black males. For example, having a seminar conducted by a group of students from CSN and other entities focusing on resistance to bias, in which the strength would be a collective feeling that "their" discriminatory behavior "just isn't going to bother us." Additionally, this group could design a one credit hour seminar to help Black males adjust to the college of aeronautical science. The seminar could emphasize time management, study skills and resourcefulness. Perhaps this strengthening of the students, when combined with faculty sensitivity and a more public exposure of how Blacks feel about being "the only one" might help. CSN should continue to offer its programs and expand its membership by actively recruiting African American males.

The Tuskegee Airmen, Inc. and the Organization of Black Airline Pilots should consider expanding their mentoring programs by opening a local chapter in or around the campus area. Programs for Black males, such as tutoring, mentoring and support may be helpful for the "pivotal" first year when many Black males get discouraged and leave aviation. Programs focusing on small group counseling and mentoring with similar kinds of students, such as those provided by CSN to predominantly Caribbean black students, indicate a continuing need for programs in these areas.

#### Recommendations for Industry

The airline industry needs to be pressured to be more public about encouraging Blacks to become pilots. Aggressive efforts should be made by the airline industry to increase the number of Black male students at Embry Riddle's College of Aeronautical Science, their major source, aside from the military, for supplying candidates.

Partnerships with middle and high schools provide opportunities for students to gain valuable experiences. Since so many of these participants were motivated by the structure of opportunity, industry-sponsored scholarships for Black males will provide further encouragement for choosing and remaining in this major. Because many areas of aviation are still predominately white male-dominated, industry must make cultural changes. Sensitivity training for all employees, at all levels and a more equitable reward system are keys to attracting and keeping Black males in the profession. In numbers there is strength, such efforts would have direct and indirect benefits to the persistence of Black males in aviation. Industries must do their part to encourage Black males and other minorities to choose and stay in aviation as they will be a significant part of the future workforce.

#### Recommendations for Faculty

While certain situations (climate, cultural, and social) have improved for Black males over the years at this particular institution, there is still a great deal more progress that needs to be made. Progress, such as changed attitudes - on the part of students, faculty, and society - toward the role of Black males' capabilities as far as non-traditional occupations, such as piloting, are concerned. Regarding advisors, Blacks often believe they are better served by other Blacks. The advising system, particularly in the first year, should provide more Black advisors and minority faculty who can serve as mentors. Students in general should be met with a welcoming attitude beginning at orientation and continuing throughout the program.

Participants, particularly the African Americans, made it clear how sensitive they are to what they perceive as discriminatory behavior on the part of faculty. To make faculty aware of this issue, a program, designed to target success rate, on faculty training regarding minority sensitivity would be helpful. One participant commented about a "pre-determined, non-biased process to form groups to avoid tokenism and isolation." Faculty should be instructed in small group dynamics and team building so they can teach these skills to students in their classes in preparation for group projects. It is also recommended that weed-out courses be tracked for attrition rates and the manner in which they are taught should be evaluated.

### **Areas of Future Research**

A comparative qualitative study should be conducted to determine whether there are similarities and/or differences among aviation programs at HBCUs.

Since this study included a small group of persisters and non-persisters in a particular institution, conducting similar studies with larger samples in other institutions is recommended. Part of the problem of drawing conclusions in a small sample is the difficulty of generalizing since there are many more variations in African Americans and Caribbean blacks. Also, other variables like community support and geographical origin play a role.

A research project in partnership with programs such as Youth in Aviation, sponsored by the Tuskegee Airmen or Young Aces, sponsored by the Organization of Black Airline Pilots, designed to identify talented Black male middle school (or early high school) students who could then be exposed to aviation through academic and career counseling, summer programs at the university, and hands-on activities. These young men could be tracked longitudinally to determine if these experiences led to choices of aviation majors.

Developmental of an instrument to identify predictors of persistence would provide a means for ascertaining a Black male's likelihood to persist in aeronautical science as well as suggestions for proactive retention programs.

Finally, develop a matrix to test the conceptualization model to see the relative contributions of the factors as it relates to persistence.

### **Conclusions**

Regarding the total process of persisting, I was struck by the differences in perception and performance amongst the Caribbean black and African American male participants and how they were able to overcome obstacles and barriers to persist through the College of Aeronautical Science. Clearly, the Caribbean participants' data revealed the substantive theory of the relationship between perceived stereotypic threat and the strength to resist believing that the stereotype is true. In this regard, by comparing the persister and non-persister processes, the study demonstrated the existence of many choice points throughout the process that determined the direction of their occupational

choice. Listed below are profiles, based on the findings, of the persisters and non-persisters, Caribbean blacks and African American male participants:

#### Caribbean black and African American male persisters

As previously mentioned, the persisters fit two patterns. The Caribbean black males made early decisions about major and occupational choice, often as early as middle school. Throughout high school, they strategically planned related courses and gained hands-on experience with aviation, either informally – one spoke about hanging out at airports – or more formally through youth aviation programs. Within this group were the Caribbean black males who felt aviation was a logical and natural choice.

The second group of persisters who made later decisions about choice of aviation as a major did so often as a result of encouragement from a family member or mentor, who suggested aviation for the structure of opportunity it provided for minorities. Oftentimes they were not as well informed or as well prepared for aviation education as the first group. The African American persisters fit this category, and their group membership contributed to a greater number of obstacles and barriers than the first group reported experiencing.

Given that there are barriers and obstacles such as inadequate academic backgrounds, poor institutional fit, tokenism and faculty and peer bias, how have these Black male aeronautical science students persisted? A combination of personality and social support have been the primary means of persistence. The nature of these Black males' personalities is to be motivated by not only the structure of opportunity but also by the hardships and obstacles they have faced. These hardships and obstacles have made these Black males all the more stronger and confident in their abilities. For example, the “weed out” phenomenon gave them all the more incentive to prove to themselves and others that they could succeed in aviation. They have developed a competitive nature, and to give up would mean failure to them. Their resilient spirits have allowed them to take criticism and learn from their mistakes. They have also dealt well with stress and performance pressures. These persisters are passionate about flying and the world of aviation and those that have already graduated are currently working as pilots.

### African American male non-persisters

While the non-persisters did not persist in the College of Aeronautical Science, they did persist very well in their new majors, the majority of them also in non-traditional majors for Black males. Like persisters, non-persisters also fit two patterns, those who probably should never have been aviation majors because it wasn't a good person-environment fit, and those who could have made it given different circumstances. While some non-persisters accepted responsibility for their poor performance in aeronautical science, all of them blamed the culture and climate in aviation education as being a factor.

For males in their first group, initial plans to major in aeronautical science were unrealistic for them, and they transferred to other majors that provided a better fit. As one non-persister commented, "My grandmother use to say, you just can't get blood from a turnip." For this reason, they also "didn't have their hearts in aviation" to begin with. Oftentimes they described their personalities as easy-going and laid back, and they especially struggled with the "rules" of aviation and the structure of the curriculum. Through their experiences with the obstacles of the aviation culture, they were able to find their own identities outside of the aviation field.

The second group of non-persisters included those males who were talked into the major. Like the persisters who were encouraged to choose piloting for the structure of opportunity, these males generally lacked hands-on experience and exposure to aviation. These non-persisters were also intimidated by the "weed out" phenomenon and turned off by the competition of aviation. They also dealt with lack of confidence and low self esteem. The aviation culture, the problems, and the inability to perform as well as they did in high school resulted in a drop in their confidence levels. This group had an especially difficult time dealing with low grades. The overall sentiments of these participants were that white males had more peer support groups and faculty role models in the College of Aeronautical Science. Because they had a narrow view of aviation, they failed to look beyond the first year at the big picture. They also failed to learn the system, and in some cases, isolated themselves and failed to find a source of support.

No single developmental pattern provided an explanation for the choice of an aeronautical science major, rather this study demonstrated a number of factors such as

family, individual, environmental and social as playing a vital role in academic persistence. A conceptualization of academic persistence, based on Preconditions, External and Internal Strategies (see Figure 5.1), illustrates those factors necessary for academic persistence. Long and short term goal clarity, exposure and skill preparation are necessary preconditions that should be met. Persisters often commented that their interest started as a child playing with toy airplanes or as one persister participant said he did not have an airplane so he just flew cars or anything around the house. On the other hand, a non-persister indicated that he decided to major in aviation at the urging of a parent – the passion was never really there. Identifying and utilizing resources such as role models and professional programs, as well as family, friends, and faith for emotional support must be developed and realized. Internally, you must have the attitude, determination, and expectation to succeed.

A final comment worth making is that Black pilots constitute less than 1% of all pilots (even less than that for African American males) in the aviation industry today. Percentage-wise, this figure is less than the number of Black pilots during the Tuskegee Airmen era (early 1940s). While individual numbers may have increased, in the bigger picture, Black pilots have decreased. This underrepresentation of Black pilots is not just a Black issue but a national issue if America is to remain as one of the global leaders. This issue must be addressed as early as the middle school years in order for Blacks to be academically prepared to compete and to recognize the role Blacks play in keeping America a democratic and safe society.

My selection of Embry-Riddle Aeronautical University was not by chance. With the exception of the U.S. Air Force Academy, Embry-Riddle trains and supplies the highest number of pilots to both commercial and military industries. A summation of this concern was best articulated by one of the focus group participants – “The College of Aeronautical Science is a microcosm of Embry-Riddle, and Embry-Riddle is a microcosm of the Aviation Industry.”