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Comparative Analysis of the USAF F-16 and RAAF F-18 Training Programs

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Abstract

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MBA, American Military University, 2008

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Dissertation Submitted in Partial Fulfillment

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Abstract

As experienced fighter pilots leave the United States Air Force (USAF) and Royal Australian Air Force (RAAF), there is a need to develop new competent pilots to meet national defense requirements. Fighter training programs are expensive for taxpayers, and the USAF and RAAF face significant resource problems developing and implementing these programs. Using policy feedback theory and punctuated equilibrium theory as the theoretical foundation, the purpose of this comparative, multi-case study of current USAF F-16 and RAAF F-18 fighter pilot training policies was to inform training policy development and efficacy of future USAF and RAAF fighter pilot training programs. Data were gathered from training policy documents and 12 interviews with F-16 and F-18 pilots. Data were deductively coded and analyzed using policy feedback and punctuated event themes. Findings indicate that policy feedbacks and punctuated events influence fighter pilot training policy. Best practices for training include optimum stress management, appropriate academic course timing, and phase-based training techniques. Optimal instructional approaches included a servant leadership philosophy and a need for improved kinesthetic flight preparation tools and procedures. The USAF and RAAF approach fighter pilot training differently. The positive social change implications stemming from this study include recommendations to the USAF and RAAF that may improve fighter pilot training policy at the lowest possible cost to the taxpayers.

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Chapter 1: Introduction to the Study

Introduction

Fighter pilot training is an expensive frontline national defense program for the United States and the Australian governments. Each nation relies heavily on airpower for its national defense (Hampton, 2014; Maldonado, 2015; Williams, 2001). Therefore, each military has an interest in ensuring that introductory fighter training produces the most proficient pilots possible. Additionally, the use of airpower often has life and death consequences. There is a tangible value in developing pilots who have the skills to accomplish tactical objectives with as little loss of life and damage to property as possible (Olds, Rasimus, & Olds, 2010). A key component of the effective application of airpower, while limiting collateral damage, is ensuring that pilots are trained to meet the demands of each mission. In this qualitative study, I compared United States Air Force (USAF) F-16 and Royal Australian Air Force (RAAF) F-18 training programs in order to provide U.S. and Australian policy makers new insights to develop future training policies that facilitate better use of resources to train fighter pilots.

Additionally, the USAF and RAAF are currently involved in the transition from fourth generation fighters such as the F-16 and F-18 to the fifth generation F-35 Joint Strike Fighter (JSF). The U.S. partnership with Australia will grow more interconnected and training opportunities will increase in the future as the United States and many of its allies transition to the JSF (USAF, 2015). This study serves as a baseline for policy makers to compare and contrast USAF and RAAF training. In this dissertation, I have provided information fighter training policy makers can use to improve developing JSF

training programs or that at least may improve understanding between the USAF and RAAF as they work together in the future. Finally, there is a collective American social value in preserving lives and minimizing the impact of armed conflict whenever possible (Hampton, 2013). Striving to improve training techniques through careful analysis is an important step in meeting those objectives in the unforgiving world of tactical aviation.

In this chapter, I provide a broad background in order to justify the utility of the study by offering the problem statement and introducing the research question. Further, I explain how I used policy feedback, punctuated equilibrium, learning theory, and an examination of fighter pilot cultures in the qualitative analysis to serve as frameworks for comparing USAF and RAAF training policy. My goal in conducting the comparison was to gain a better understanding of (a) the factors that influence stakeholders to resist, accept, and instigate changes to policy, and (b) how the current policy process influences future training policy. It is important to note that the USAF, RAAF, and the Walden academic community communicate in English; however, each organization has its own language and culture. This study was written in plain English whenever possible and the use of jargon and acronyms are explained. Finally, the study is unclassified.

Background

The U.S. Department of Defense (DoD) faces a significant challenge in developing effective fighter pilot training policy. This is because there is a need to meet mandated fighter pilot manning levels during a period of diminishing budgets and fiscal uncertainty (Chapman & Colegrove, 2013; Maldonado, 2015). As seasoned aviators depart the USAF, policy makers desire to prevent previous mistakes from past force

reductions (Coe & Schmitt, 1997; Taylor, Moore, & Roll, 2000). The DoD's goal is to balance the remaining resources to develop confident, safe, and competent new fighter pilots (Croft, 2012; Ennels, 2002). For example, there is a growing concern that introducing larger F-16 class sizes to meet the increase in fighter pilot demand to solve a current USAF fighter pilot manning crisis (Pawlyk, 2017) could reduce the quality of pilots graduating from introductory F-16 training.

The USAF F-16 course-training managers consistently seek new ways to improve F-16 training. However, there has not been a comparative analysis exploring how the RAAF conducts its F-18 training compared to the USAF F-16 program. The USAF and RAAF conduct a typical western fighter-training program (Hampton, 2014). It is important to note that the USAF and RAAF model is not the only model for fighter pilot training. For example, the United States Marines conduct air to surface prior to air to air training, and the Dutch are experimenting with introducing missionized training scenarios earlier in the training pipeline rather than following the ridged building block approach used in the USAF and RAAF programs (Van der Pal, Boland, & de Rivecourt, 2009). The fact that the USAF and RAAF training programs were designed similarly was helpful during the study because each course provided an easy to identify training standard or common language that I used to more fully explore the idiosyncrasies of each program.

The RAAF is a small air force and its F-18 training program is constrained by significant resource limitations (Australian Government, 2015; William, 2001). This case study comparing the RAAF F-18 training policy with the USAF F-16 training policy can

give course designers insights and new ideas to improve course structure. As a means of comparison, I used policy feedback and punctuated equilibrium to explore how each community develops its policies. Learning style theory was used as a comparative tool to explore how fighter-training programs are constructed and to focus on the actual content and instructional techniques of the courses rather than the overarching training policy. The reason for this delineation is that learning style theory helped me compare and understand the components of the course so that I could more easily understand the resulting overarching training policy. Finally, I included an examination of the fighter pilot cultures to provide a comprehensive understanding of how fighter training programs and policy are developed. The resulting information can aid policy makers in deciding how best to allocate resources during future USAF fighter pilot training programs. Although the study explores specific USAF and RAAF training programs, the information can also prove valuable to policy makers administering other DoD and allied nation training programs.

Although the USAF has conducted studies to improve fighter pilot training, there has not been a direct comparison between the USAF F-16 and RAAF F-18 training programs. I am an USAF F-16 instructor pilot who recently served as an exchange officer with the RAAF. Drawing on this unique experience, I sought to provide policy makers new information to help improve future fighter training programs.

Problem Statement

The USAF is required to develop enough fighter pilots with the correct skills to meet the needs mandated by the DoD. The DoD has attempted to balance the amount of

resources, manpower, and finances used to train U.S. fighter pilots. During the Vietnam War, fighter pilot training was abbreviated to replace downed fighter pilots (Chapman & Colegrove, 2013; Hampton, 2014; Olds et al., 2010). As a result, many new pilots were inexperienced and faced a dangerously steep learning curve to survive in combat. In contrast, during the robust military buildup of the 1980s and leading into the Gulf War, many pilots had thousands of training hours before their first combat experience (Coe & Schmitt, 1997). The DoD faces a problem as experienced fighter pilots leave the USAF over the next decade. There is a need to avoid the mistakes of Vietnam by developing new pilots and weapons systems that are capable of meeting DoD defense requirements within current national budget constraints. The goal is to improve future policy to efficiently balance resources to provide safe, competent, and confident new fighter pilots. The RAAF also faces resource constraints for its fighter pilot training programs (Auditor General, 2004; Australian Government, 2015). Both the USAF and RAAF are cooperating in the development of the new F-35 program and the resulting training policy (USAF, 2015). In this case study, I investigated RAAF F-18 training policy compared with F-16 training policy. The results may provide the USAF and RAAF with new insights into alternative options to improve training policy.

Purpose of the Study

The purpose of this qualitative study was to compare and understand the differences between USAF F-16 training and RAAF F-18 training in order to provide policy makers new knowledge to improve future fighter training programs. The 2015 USAF active duty F-16 training program budget was $144 million with 10,800 sorties

and 14,600 flying hours (USAF, 2015). In 2004, the RAAF spent an estimated $15.2 million to train each new F-18 pilot (Auditor General, 2004). The 2015 USAF F-35 training program is currently budgeted at $7.8 billon (Gertler, 2014) and the RAAF plans to spend $17 billion in the next 5 years to acquire the JSF (Australian Government, 2015). Additionally, Maldonado (2015) found the F-35 program to play a significant role in the future national security of the United States, and the USAF announced it plans to continue flying the F-16 until 2048 (Clashman, 2017). Considering the cost and importance of these programs to national defense, in this study I sought to better understand current fighter pilot training programs to help future policy makers develop new policies that minimize costs and maximize combat capability.

Research Questions

The following central research question guided this study:

What can USAF F-16 and RAAF F-18 fighter pilot training policies reveal about the best practices and optimal instructional approaches to improve policy development and efficacy of future USAF and RAAF fighter pilot training programs?

Sub-questions:

1. How influential are current RAAF and USAF policy practices in shaping the development of future policy?
2. What training techniques are perceived to be most effective and efficient to train new fighter pilots as fighter aircraft technology and training systems advance?

3. What impact will new technologies such as aircraft upgrades, simulator capability, and new aircraft have in shaping future policy?

Theoretical Guidance

The framework for the study was based on a direct comparison of the USAF and RAAF policy documents and cultures that define the current policy. USAF and RAAF policies continue to evolve, and policy feedback theory (PFT) as well as punctuated equilibrium theory (PET) may complement each other to help explain how current policy will influence future policy and help determine what factors will force a shift in policy.

The pilot training process began before the Wright brothers' first flight and the evolution of flight training policy continues today (Ennels, 2002). There is conflicting information concerning how best to structure pilot training courses and what are the most effective ways to bring pilots to the required standard in the shortest amount of time. In the literature review, I focused on PFT and PET to explain how stakeholders receive and process inputs that lead to future policy outputs. For example, I sought to understand what sorts of cultural, technological, and political factors most influence fighter pilot training policy development and implementation. Learning style theory is also introduced in the literature review because I used it as a comparative tool to aid data collection. Adding to the complexity of this issue is the fact that different air forces develop their own organizational cultures, which influence how pilot training courses are designed and implemented (Hampton, 2014). The USAF and RAAF cultures will likely become more intertwined during the transition to the JSF, and understanding each culture is important

to understanding the current policy and how to improve future policy within each organization.

Nature of the Study

Theory

PFT and PET have become important components in policy scholars' understanding of public policy (Sabatier & Weible, 2014). The phenomenon I investigated is that the USAF and RAAF conduct very different fighter training programs and policies, but both produce highly proficient, multirole, single seat, fighter pilots. For example, in the current fight against Daesh in Iraq and Syria, USAF F-16s and RAAF F-18s are used interchangeably to accomplish Combined Forces Air Component Commander (CFACC) objectives (Laird, 2015; Pawlyk, 2016). Given these different training policies, I sought to understand how each nation develops fighter-training programs that ultimately facilitate the production of fighter pilots with similar competency levels through very different means. PFT predicts that current policy will directly influence future policy. However, PET predicts that there will be occasional events that propel a massive change in policy. By synthesizing ideas from PFT and PET while comparing the USAF and RAAF fighter training programs, I worked to improve military leaders' and policy scholars' understanding of the fighter pilot training policy process that could lead to future improvements. The implementation of the F-35 program may provide a catalyst of change to both the USAF and the RAAF in the near future. There appears to be a dichotomy between how current RAAF and USAF training policies influence future policy during large technological changes. The USAF and RAAF policy

makers may structure their respective F-35 training programs based on the current F-16 and F-18 program policy feedbacks. Or new technology and the mingling of contrasting cultures may create punctuated events that completely change the status quo in USAF and RAAF fighter pilot training. By grounding this investigation of USAF and RAAF fighter pilot training programs and culture in PFT and PET, I was able to comprehensively compare each program.

Qualitative Approach

The study was a qualitative, comparative, multi-case study of the USAF F-16 and RAAF F-18 training programs. It is important to note that I used quantitative concepts such as ratios of academic, simulator, and flying events throughout the study. However, quantitative data alone did not allow me to adequately address the research questions. Instead, I used the qualitative approach to explore not only the training programs, but also the culture and resulting policy differences between the USAF and RAAF. Fighter pilot training is as much an art as it is a science (Coe & Schmitt, 1997; Hampton, 2013; 2014). It was important that I had the flexibility to explore the topic with an open-ended format for comparison rather than to structure a quantitative comparison that did not have the adaptability to explore the idiosyncrasies that define different training policies. The USAF and RAAF use of single and dual seat aircraft during their respective training programs is an example of the differences that are discussed in future chapters. The majority of USAF F-16 training sorties are primarily flown solo while the RAAF F-18 sorties often include a dual seat aircraft with an instructor in the back seat (Hampton, 2013; Williams, 2001). The differing training styles and resulting psychological

influences affect the instructional delivery techniques. As a result, they have an impact on the content of the training program. A qualitative approach allowed me to more fully explore the differences. The programs may seem very similar from a policy perspective. However, from a cultural and implementation perspective the programs were different even if they followed similar training models. The qualitative approach provided more appropriate tools for identifying and explaining these subtleties.

Methodology

This was a qualitative case study with the primary data collection consisting of document review (abstracting) of the USAF and RAAF training syllabi. To begin, I examined the intent of each portion of the course. After reviewing the basic objectives and content of the training policies, I was better able to understand the differences and specific values and factors that were critical in the development of current fighter pilot training policy.

It is important to note the document review did not tell the entire story, and some triangulation techniques (Yin, 2011) were required. For example, 12 email interviews with RAAF and USAF students, instructors, and previous exchange officers were required to provide context for the study. I recruited the participants from a convenience sample for several reasons. First, I was in Arizona at the time of data collection with limited availability to correspond with former exchange officers or RAAF student pilots in person. Therefore, the interview format consisted of a questionnaire (Appendix C) that was administered via email. I used my experience and understanding of the RAAF and USAF to select RAAF student pilots who had similar experience levels for comparison

with the USAF student pilots. The training pipelines are very different between the USAF and RAAF. For example, a typical USAF F-16 student usually has only completed 1-2 years of flying training before arriving at the F-16 schoolhouse. In contrast, the RAAF student likely has completed 4-5 years of training before arriving at F-18 training. Due to a need to minimize the research footprint on the USAF and RAAF target populations, I conducted only 12 interviews. The interviews were only necessary to provide cultural context to the prime policy sources, which were the respective RAAF and USAF syllabi.

Ethical Concerns

My goal in this study was to focus primarily on document analysis for the research. There are many concerns and requirements when conducting primary research through interviews, Institutional Review Board (IRB) approval, and implementation of strict safeguards for human participants. The 12 interviews provided perspective on each of the programs beyond what was written in the program documents. For example, the culture of each organization played a significant role in how the programs were administered. I was able to gather rich and insightful data on each program while also ensuring that I met ethical guidelines while interacting with participants.

As an USAF pilot, I brought a level of bias to the study. Having spent many years in the USAF and only one tour in the RAAF had an impact on how I interpreted each program. I purposely decided to conduct the study after finishing the F-18 training program in order to provide distance from the experience before trying to objectively analyze the information.

Key Abbreviations and Definitions

ACM: Air combat maneuvering (Hampton, 2013).

Air-to-air training: Mission focused on combat tactics versus other aerial target (Hampton, 2013).

Air-to-ground training: Mission focused on delivery of air to ground weapons (Hampton, 2013).

BFM: Basic fighter maneuvering (Hampton, 2013).

BSA: Basic surface attack (Hampton, 2013).

CAS: Close air support (Hampton, 2013).

CFACC: Combined forces air component commander (Hampton, 2014).

DCA: Defensive counter air (Hampton, 2013).

Fighter pilot culture: Cultural dynamics within fighter pilot organizations (Hampton, 2014).

Hornet: F-18 nickname (Hampton, 2014).

Learning style theory: The theory that student learning can be improved by identifying students' preferred learning style and then focusing study time towards study methods that fit the preferred learning style (Hawk & Shah, 2007).

Lightning: F-35 nickname (Maldonado, 2015).

OPSAT: Opposed surface attack tactics (Hampton, 2013).

SAT: Surface attack tactics (Hampton, 2013).

Transition training: Training designed to teach the basics of takeoff, landing, acrobatics, and emergency handling (Hampton, 2013).

VARK Model: Visual, auditory, read/write, and kinesthetic learning model (Hawk & Shah, 2007).

Viper: F-16 nickname (Hampton, 2013).

Assumptions

This study is unclassified. I used fighter-training syllabi from the USAF and RAAF as the primary sources of information because syllabi served as the most clear and stable means to explain how fighter pilot training programs are structured and implemented. The syllabi are *for official use only* documents; therefore, the documents cannot be released outside of the government, but the information taken from the syllabi and presented in this study is unclassified and has no restrictions on its use.

The differences in language use between the USAF and RAAF are extensive. For example, the equivalent of an F-16 instructor pilot in the USAF would be an F-18 BMQ, B Category pilot in the RAAF. In order to avoid focusing on the semantics and the fact that the main audience for the study will be in the United States, I have used USAF terms to translate between the RAAF and USAF systems. The challenge with this is that RAAF members might be confused when I use USAF terms to describe a qualification, program, or event in the RAAF system. This translation streamlined the flow of information and set a consistent standard throughout the study.

Scope and Delimitations

The USAF and RAAF pilot training, operational training, and weapons instructor course training programs are all very different in content and philosophy. There is potential for future study of each of these programs that would complement this study. In

this study, I examined the USAF Air Education and Training Command (AETC) F-16 training program and the RAAF Classic F-18 training course. The primary reason this data set was chosen is because each syllabus has a well-defined document that communicated how each program was administered. Although many other fighter pilot training programs in the USAF and RAAF are similar, they are not as well defined as introductory training courses.

PFT and PET are met with varying levels of support and resistance within the academic community (Sabatier & Weible, 2014). However, each theory served a specific purpose to aid in the comparative framework for this study. There are other theories such as multiple streams, the advocacy framework, and narrative policy theory that could add value in future research when comparing fighter pilot training programs, but these were either a poor fit or beyond the scope of this study. Learning style theory was also beneficial for this study because it provided an easily identifiable framework to use for comparison between the two programs. The differences in effectiveness of a PowerPoint slide designed for a visual learner versus a lecture designed for an auditory student was not my focus in the study. Instead, this study's most beneficial aspects for policy makers and future researchers stem from evaluating how and why each air force develops fighter training policy, and from identifying and explaining the cultural differences that shape those decisions.

Limitations

The biggest limitation for the study was access to information. The USAF and RAAF operate with unique security regulations and standard operating procedures

(SOPs). Many of these security restrictions are very different between each respective air force. For example, the RAAF agreed to grant access to the policy, overview, and administrative portions of the syllabus but not the specific flight details of each ride. However, I did not have the same restriction when accessing the USAF syllabus. Fortunately, the scope of this study only required access to the policy and administrative portions of the RAAF syllabus. For example, I explored the weight of effort, types of training methods, and instructor delivery methods rather than comparing specific tactical differences in training content. Furthermore, my addition of the interviews to the study helped further facilitate the comparison and provided insight into the training policy process. The comparison remained within the constraints of the military information handling process.

Significance

I designed the multi-case comparative analysis of the USAF F-16 and RAAF F-18 training program to explore how different training policies impact the effectiveness and efficiency of the training programs. The USAF and RAAF approach fighter pilot training differently, and exploring those differences may lead to new knowledge to help improve USAF fighter pilot training. The comparative analysis exposed some of these differing techniques that may lead to future USAF policy improvements. Improving fighter-training programs will help the USAF remain a good steward of taxpayer money by maximizing capability at the lowest possible cost. The study may provide policy makers new information that could be beneficial in shaping future training policy decisions.

Summary

In this chapter I provided an overview of the study to justify the utility of the analysis by defining the problem statement, developing research questions, and explaining the theoretical framework that was used in the qualitative analysis to facilitate the comparison. USAF flying and program terminology was used as the baseline to compare the USAF and RAAF training programs. Throughout this dissertation, I have used plain English as much as possible to maximize the number of stakeholders that could use the information in the study while limiting confusion related to terminology differences between the USAF and RAAF. Finally, the entire study remained at an unclassified level.

A major challenge to this study was the complexity of comparing different organizations that take a pilot with limited tactical flying experience and turn him or her into a proficient fighter pilot. In the following literature review in Chapter 2, I present a means to objectively compare each program from a policy perspective. It is important to note that the comparative tools were not perfect, nor were the comparisons between the training programs. However, understanding the literature and research methods used by others to evaluate policy phenomenon helped provide the needed context for the study and a manageable way to organize complex information.

Chapter 2: Literature Review

Introduction

The United States and Australia are loyal strategic allies and have worked together during many major conflicts over the past 100 years. As a result, the USAF and RAAF have a shared heritage of cooperation through the development and evolution of western airpower at the strategic, operational, and tactical level of warfare. USAF and RAAF leadership have indicated that fighter aircraft capability is a critical component of an effective combat air force (Maldonado, 2015; William, 2001). Australia purchased F-18s in 1985 to serve as the backbone of its fighter force (William, 2001). In the U.S. DoD, only the Navy and Marines fly the F-18, which is important because the missions of an air force and a navy are often very different at the operational and tactical level. The USAF purchased the F-16 in the late 1970s to serve as the primary USAF multi-role fighter (Hampton, 2013). Different cultures coupled with different aircraft have resulted in USAF and RAAF fighter training policies that achieve the same end in very different ways (Chapman & Colegrove 2013; William, 2001). This distinction is important because Australia has decided to purchase and share in the development of the fifth generation JSF as its replacement to the aging F-18. The USAF will also replace many of its F-16s with the JSF. The USAF and RAAF are currently working together to develop a new fighter pilot training policy to usher in the JSF (Allied Force Headquarters [AFHQ], 2014). The shared program will potentially forge a stronger bond and improved interoperability between two very different air forces. With the intent of improving future USAF fighter training polices, I conducted this study to better understand the fighter pilot

training policy process by comparing the USAF F-16 and RAAF F-18 introductory training courses. This comparison is important because new information generated in this analysis could help policy makers better manage resources and potentially save taxpayer dollars in the effort to train future pilots.

The USAF may seek to incorporate the best practices of USAF and RAAF fighter pilot training as it develops the JSF training policy. For example, current western fighter pilot training programs consist of a mix of academic classes, simulator sessions, and flight training (Kozuba & Bondaruk, 2014; Linquist, 2015). Training policy authors must blend each of these components into a program that balances resource and technological constraints, instruction techniques, student learning abilities, and safety concerns in order to develop competent new fighter pilots (Beigh, 2006; Kozuba & Bondaruk, 2014; Linquist, 2015). The unforgiving nature of tactical aviation requires USAF and RAAF policy makers to continuously evaluate the methods used to construct fighter pilot training policy (Chapman & Colegrove, 2013). There are many competing as well as complementary policy theories scholars use to define and understand how and why policies are developed, change, and impact the organization and its associated stake holders (Sabatier & Weible, 2014). PFT and PET are widely used to explain and understand the policy process (Cairney, 2013a; Givel, 2010; Sabatier & Weible, 2014). PFT provides insight into how existing policy influences stakeholders to create future policy. Meanwhile, PET focuses on the long periods of static policy that become engrained in an organization compared with occasional catalysts that drive rapid change in an organization (Baumgartner et al., 2014). There is a dichotomy within organizations

that leverage current operating practices to develop new policy but then also occasionally undergo radical change during a punctuated event that is fundamentally different from previous policy. Examples of a punctuated event include new technology, ideas, or a political directive that rapidly generates policy change with little regard for prior institutional restraints. By melding concepts from both PFT and PET, I sought to further explain and improve scholarly understanding of the development process of public policy (Cairney, 2013b).

PFT and PET are two of many theories scholars have developed to explain the policy process and that I deemed relevant to my study. Cairney (2013a) advocated for the importance of combining multiple approaches from varying theories to model and understand the complexity of many public policies. Together, PFT and PET served as a lens I used to compare the USAF and RAAF training programs to improve understanding of the policy process and the factors that impact the evolution of public policy. Specifically, I reviewed resource allocation and organizational structure as well as academic, flight, simulator, and instructional techniques to explore the fundamental components of current 4th generation fighter pilot training policy.

In this chapter I summarize the current literature concerning PFT and PET as they apply to previous comparative policy studies so that key concepts of the theories can be used to compare, contrast, and ultimately better understand the dynamics of USAF and RAAF training policy. In order to provide context, additional policy theories are mentioned in this discussion, as I do not assert that PFT and PET are the only theories that could apply to the study of fighter pilot training policy. Additionally, detailed

information is provided to explore the components of the training programs that comprise training policies. The current F-16 and F-18 programs structure training events to stimulate student's visual, auditory, and kinesthetic means of learning through reading, lectures, testing, simulator sessions, and flight-based training (Chapman & Colegrove, 2013). Understanding the dynamics of the learning process in tactical aviation is important to understanding how current training policy could influence future training policy (Chapman & Colegrove, 2013; Hawk & Shah, 2007). Learning style theory is introduced as a means to understand the learning process used in fighter training program. I used it as a tool to categorize the training program components in order to fully analyze the USAF and RAAF fighter pilot training policy development processes. My aim was not to only compare and contrast policy theories or training techniques but also to compare and synthesize two countries' fighter pilot training programs in order to improve future training policy. I used PFT and PET as the primary building blocks to construct the needed foundation to conduct a scholarly comparison of two unique fighter pilot training policies.

A critical consideration in this study of fighter pilot training programs was not only the policy, curriculum, aircraft, maintenance, instructors and students, but also the respective professional and national cultures that influence the organizations and, therefore, the resulting policies. The fighter pilot community has developed its own culture through its century long evolution (Carlson, 2011; Coe & Schmitt, 1997; Ennels, 2002). Therefore, I offer a brief synopsis of current literature concerning fighter pilot culture to explain how many of the training decisions are made. Many aviation rules,

regulations, and procedures are commonly referred to as having been "written in blood." It therefore takes a vast amount of effort to change policy and culture within aviation organizations (Coe & Schmitt, 1997; Ennels, 2002). Policy makers must constantly evaluate if a practice is in place for a valid reason or if it has remained in place simply because that is the way the organization has always operated (Chapman & Colegrove, 2013). Fortunately, the USAF and RAAF have taken great strides in documenting the intent, goals, and structure of their fighter pilot training programs in order to standardize current training, and this documentation is beneficial when comparing each organization (Chapman & Colegrove, 2013; Williams, 2001).

Before diving directly into the body of literature on PFT, PET, learning theory, fighter pilot culture, and previous research related to training policy, I summarize the key portions of the search strategy used to identify the theoretical foundation of each respective theory. After defining and explaining PFT, PET, and relevant learning theory concepts, I briefly address the theoretical foundation of the study and its relationship to the comparative analysis of the fighter pilot training programs and resulting training policy. Additionally, I demonstrate how a synthesis of literature on PFT, PET, learning theory, flying training policies, and fighter pilot culture supported my qualitative multi-case study (see Yin, 2011). I then summarize the major themes of the literature and explain how the resulting study fills a knowledge gap in fighter pilot training policy formulation. Finally, I provide justification for the research methods used in the study.

Literature Search Strategy

I separated the literature research strategy into four distinct portions as each portion served a specific role in the study. First, PFT followed by PET are addressed in order to structure the comparison between the F-16 and F-18 policy. Second, I address current training structure through the lens of learning theories focusing on visual, auditory, and kinesthetic learning techniques to better define how a training program is structured. Third, I discuss USAF and RAAF fighter pilot culture in order to provide context for how each organization develops its policy and implements the training. Fourth, a review of current literature concerning pilot training policy and pilot training programs is included to establish a baseline of existing knowledge that this study will build upon. I was unable to find extensive academic studies addressing the fighter pilot training policy process and have included analogous studies addressing airline and general aviation flying training policy processes to include examples and analogs that have parallels to the military training process. There is potential to expand this research stream to other career fields including high-stress performance-based training such as medicine, police, fire, rescue, and other segments of the military. However, I took care to avoid diluting the aim of the study, which was to focus primarily on the world of tactical fighter military aviation.

I used Ebscohost Premier and Sage policy search engines as the primary means to gather information. Google Scholar was also used to survey the depth of information available on the policy subject and to fill in gaps in fighter pilot training and culture that are missing in the typical academic search engines. Keywords in my searches included:

policy feedback theory, *punctuated equilibrium theory*, *policy theory*, *public policy*, *fighter pilot training*, *airline pilot training*, *pilot training, pilot culture*, *fighter pilot culture*, *airline pilot culture*, *learning style theory*, *learning theory*, *comparison of Australia and the U.S.*, *comparative studies*, *military training*, *comparative military training*, *F-16 training*, *F-18 training*, *Joint Strike Fighter training*, *coalition training*, and *organizational culture*.

Theoretical Foundation

The study of public policy is a dynamic and complex endeavor because of the infinite number of variables that potentially define the policy environment. Culture, organizational mandates, stakeholder interests, and resource allocation are just a few of the dynamics that influence public policy. In the fighter pilot training community, different western fighter training programs with similar missions and goals develop very different training programs, which drastically influences training policy development and execution. Specifically, the USAF F-16 training program, culture, and execution is different from RAAF F-18 training, although each has a mandate to develop mission-ready multi-role single seat fighter pilots who are poised to operate in a coalition environment. In order to understand why the policies are different it is necessary to examine each program's training policies as they relate to prominent policy theories to better understand the policy process and, more importantly, the outcomes.

PFT and PET have become important lenses through which to view public policy (Sabatier & Weible, 2014) and provide context to better understand the training policy phenomenon. Multiple streams, advocacy coalition, and narrative policy frameworks are

additional perspectives to evaluate public policy (Sabatier & Weible, 2014). It seems restrictive to classify the policy process by a single model. Cairney (2013b) advocated for a more comprehensive approach by integrating multiple policy theories to gain better understanding of a policy phenomenon. A theoretical synthesis approach is not necessarily a compromise of multiple theories, but instead an opportunity to explore (a) how the construct of a policy model ebbs and flows as a situation changes, and (b) how different facets of a policy are interconnected. The synthesis approach provides the policy scholar additional tools to understand phenomena within the realm of public policy (Cairney, 2013b). In this study, I specifically explored the USAF and RAAF fighter training policy, and my synthesis of PFT and PET provided a construct to evaluate the policy of two different organizations.

The PFT approach could help explain the consistency in USAF and RAAF training policy (Coe & Schmitt, 1997; William, 2001). Although PET will be discussed later, I should now note that proponents predict that occasional punctuated events propel massive change in policy (Sabatier & Weible, 2014). The implementation of the F-35 program could provide such a catalyst to both the USAF and the RAAF in the next 5 years of the policy process. A blending of PFT and PET concepts may help explain the training policy transition. While I may not have developed a method to predict future policy decisions based on previous policy processes, the comparison through the lens of PFT and PET was designed to improve understanding of USAF F-16 and RAAF F-18 policies, which could help policy makers improve future training programs.

PFT and PET Defined

The basic premise of policy feedback theory focuses on how current and past policies influence future policy decisions and more importantly the actors that make policy decisions (Allerdice, 2011; Baumgartner & Jones, n.d.; Mettler & Sorelle, 2014). This dynamic is important when exploring the USAF and RAAF as both are large complex organizations and are influenced by current policy and procedures when developing new policy (Allerdice, 2011). Policy feedback loops can influence which stakeholders are empowered and which are marginalized by a new policy (Mettler & Sorelle, 2014). These direct and indirect outcomes impact how future policy decisions are made. For example, the introduction of the GI Bill increased political participation in the United States as a result of increased economic opportunity as service members took advantage of educational opportunities following World War II (Mettler & Sorelle, 2014). Allerdice (2011) found that based on policy feedbacks the refugee integration system in the United States and Australia to be very different in assimilating Sudanese refugees into each respective country. It is not the specific outcomes of Allerdice's (2011) study that are most important but instead her research process shows that Australian and U.S. policy feedbacks play a significant role in how stakeholders react to policy. Additionally, Allerdice (2011) showed that a disruptive event such as a Sudanese crisis could rapidly create a new policy that creates new policy feedbacks. This dynamic of stability and punctuated change can have a significant effect on the policy process and how stakeholders react to the policy (Mettler & Sorelle, 2014). The USAF and RAAF multi-case study will also explore the differences in U.S. and Australian policy

development. Using concepts from previous U.S. and Australian comparative policy studies that illustrate the PFT process, and indirectly PET concepts, strengthens the validity of this study's theoretical framework.

Punctuated equilibrium theory is a robust tool to understand the policy process on its own (Baumgartner et al., 2014; Givel, 2010). For example, the civil rights movement or the events of September 11, 2001 highlight how a dramatic event can completely reshape policy that results in a new paradigm. However, the punctuated event does not occur in a vacuum and no matter how influential the event, a previous policy or practice will likely influence outcomes (Mettler & Sorelle, 2014). This dynamic is used to understand why the USAF and RAAF have developed their current policies, to help identify what events may create tipping points in policy development, and how the inertia and entanglements both good and bad of previous policies will re-define the new status quo (Gladwell, 2008 Hampton, 2014; Mettler & Sorelle, 2014). The competing and complementary forces of PFT and PET in the RAAF and USAF policy process will form the framework to evaluate each program.

PFT and PET Origins

Policy feedback theory is a relatively new method of evaluating the policy process as much of its support has been constructed in the past 25 years. However, as early as 1935 Schattschiender (as cited in Mettler & Sorelle, 2014) explained how new policies influence new politics. In 1972, Lowe reinvigorated the idea and Anderson again promoted the idea in 1990 during an analysis of welfare states' effect on stakeholders (Mettler & Sorelle, 2014). However, during the late 1980s and early 1990s there was

resurgence in the policy feedback construct that continues today (Mettler & Sorelle, 2013). Policy feedback theory is extensive and is not defined by a singular argument. Mettler and Sorelle (2014) explained that PFT has evolved into a multiple streams approach including meaning of citizenship, form of governance, power of groups, and political agendas as tools to model public policy development. This study will primarily focus on three streams. First the *governance* stream is used to understand the mandate, missions, and requirements for USAF and RAAF pilot training policy. Second, the *power of groups* stream is addressed because specific stakeholders that are involved in the fighter pilot training process are important in understanding the training policy process. Finally, the *political agenda* stream is reviewed to better understand the political influences such as national and personal motives that drive changes in pilot training policy.

Punctuated equilibrium theory explains that most policy situations are defined by stability, but in times of dynamic change, or even crisis, large changes can occur that restructure the status quo (Baumgartner et al., 2014). This construct is very much in line with Gladwell's (2008) tipping point theory as well as Taleb's (2010) black swan model that helps explain the dynamic between stability and drastic change. This is not to say that policy does not develop incrementally, only that there is a relationship between stability and change that many other theories do not recognize. Schattschnieder (as cited in Sabatier & Weible, 2014) played a role in explaining the difficulty of marginalized groups in influencing the establishment with new ideas; however, Baumgartner and Jones (n.d) are credited with aggressively advocating punctuated equilibrium concepts in the

study of American politics. Jones, Thomas, and Wolfe (2014) addressed the PET debate by explaining that the policy process as a bubble that expands, contracts, and occasionally bursts based on the inputs and outputs that drive the policy process. My comparative multi-case study will explore the relationship of the current training policies within the USAF F-16 and RAAF F-18 communities to better understand the potential for drastic changes with the development of new technologies. This endeavor has the potential to help future policy makers and scholars understand the dynamics that shape fighter pilot training across a large spectrum of western fighter pilot training programs.

Punctuated equilibrium theory in the policy arena is used similarly as the theory of evolution and adaptation is used in the study of biology. Adaptation is often slow or non-existent until a particular stimulant creates an environment that promotes a rapid change. Moving away from the natural sciences discussion towards the evolution of policy allows one to explore many examples of stable public policy being completely changed as a result of a new event, technology, or dynamic (Baumgartner et al., 2014). An example in the USAF would include the development of air-to-air refueling capability, which allowed tactical aircraft with an unlimited fuel range to strike deeper targets and provide more persistence in the battle space as a result of new technology. This change allowed the USAF to restructure how it applies air power and the many different policies that are required to define and support it (Hampton, 2014; Olds et al., 2010).

PFT and PET Hypotheses and Delineations of Assumptions

Before attempting to meld the concepts of PFT, PET, learning theory, and fighter pilot cultural dynamics into a comprehensive explanation of the RAAF and USAF fighter pilot training policy process it is necessary to briefly explain the hypotheses and delineations of each theory. This exercise will serve as a basis of comparison with other leading public policy theories and will provide support for the author's decision to bound the policy comparison through the lens of PFT and PET. As previously discussed, policy feedback theory governance, power of groups, and political agenda aspects are the primary focus for the study.

PFT governance stream. The governance stream predicts that polices, once established, will often affect future governance (Mettle & Mallory, 2014). This delineation is the corner stone of PFT and therefore may seem a bit repetitive in this chapter but it is important because it has many potential impacts on large bureaucratic organizations such as the USAF and RAAF. Standard operating procedures, directives, and multiple forms of official documentation shape, define, and influence current responsibilities in the organization and greatly impact the scope all respective stakeholders have in defining the future of an organization. As an example, Mettle and Mallory (2014) explained that because the Social Security Administration (SSA) earned a reputation for efficient administration of retirement programs this motivated lawmakers to expand the SSA authority to also help administer the Medicare program. Thereby increasing the influence of the SSA as a result of feedbacks within the policy process. This distinction is important considering the future of the JSF program, as there are many

different fighter communities that have an interest in shaping the new policy. How the directive policy is written and administrated could impact the direction of the future policy based on the stakeholders that are empowered by the new policy.

PFT power of groups. The power of groups plays a role in how the USAF and RAAF operate as organizations. There are many different and often competing organizations that seek additional control of resources and influence within the organization. For example, during the Cold War the Strategic Air Command was a dominant force in the USAF and focused its efforts and resources on building and training a long-range strategic bomber force (Coe & Schmitt, 1997). As a result of the Vietnam War there was a shift in the USAF towards tactical fighter aircraft due to mission requirements during more limited operations in South East Asia, the Balkans, and the Middle East (Hampton, 2014; Olds et al., 2010). The consequence was a shift in the power structure in the USAF and a similar shift in power dynamics may occur in the future as the political and military environment changes. For instance, as unmanned aerial vehicles (UAVs) become more and more capable there is potential for a shift in power structure in the USAF between manned and unmanned programs (Hampton, 2014). How the current fighter and UAV communities adapt as a result of new programs such as the F-35 may significantly impact future USAF policy and internal power dynamics.

PFT political agenda. Current and future USAF programs are not created merely on calculated decisions of capability and cost-benefit analysis. There are multiple competing agendas that influence the evolution of a program (Mettler & Sorelle, 2014). A recent initiative by the DoD to retire the A-10 aircraft and to extend the F-16 and F-18

lifetime highlights this point (United States Government Accountability Office [GAO], 2012). The USAF proposed retiring the A-10 in order to reallocate resources to the F-35 program. However, the A-10 community and Army have a deep appreciation and respect for the capabilities of the airframe and have resisted the move. Additionally, congressional and senate leaders have resisted the plan out of concern for the impact on civilian communities once A-10s are retired from Davis Montham AFB, Arizona (Zengerle, 2014). From a policy perspective, these examples are beyond the scope of the F-16 and F-18 comparison, however, they are used to highlight that individual political agendas often impact the policy process and are a key element of policy feedback theory.

Learning and Training Theory

The basic premise of learning style theory is that individuals can be classified according to a particular style of learning that best represents their learning strengths (Panshler, McDaniel & Bjork, 2008). Flemming and Mills' (1992) visual auditory read/write and kinesthetic sensory (VARK) model was one of the most common and widely used models to explain how individuals learn (Hawk & Shah, 2007). The concept was built upon the idea that individuals use different neuro-linguistic programing models to learn most efficiently (Stahl, 1999; Zapalska & Brozik, 2007). There are many other models that could be used to explore F-16 and F-18 training (Kavale & LeFever, 2007; Kolb, 1984). In this study learning style theory was used because it is a readily accepted training model and served as a means to develop a comprehensive program comparison. Specifically, the VARK model provided structure to the training comparison leading to a policy comparison from a PFT, PET and fighter pilot culture perspective.

The concept of learning modalities are a construct of learning style theory that predicts that sensory preferences affect how an individual learns (Dunn, Beaudry & Klavas, 1989). The F-16 and F-18 training programs include components of each mode of the VARK model (Hampton, 2013). One interpretation of learning style theory would suggest that a read-and-write oriented pilot could read a flight manual and then gain all the information they required to fly an airplane. In reality, this tactic would likely lead to disaster (Beigh, 2006). Another plausible interpretation of the theory would suggest that a read-and-write oriented student would be most successful by blending all components of the VARK model but using written material as the corner stone of the learning process (Panshler et al., 2008; Romanelli, Bird & Ryan, 2009; Stahl, 1999). The policy maker may gain further insight into training policy development by understanding these distinctions because training programs are often ridged, time compressed, and standardized to leverage preferred learning modalities (Carlson, 2011; Hampton, 2014).

USAF and RAAF Fighter Pilot Culture

An important aspect of the study was defining and understanding how USAF and RAAF fighter pilot cultures impact the training philosophy. For example, the USAF F-16 training program is highly defined by a single seat aircraft mentality and the training program is designed so that all sorties could be accomplished in a single seat plane. However, USAF policy makers do currently dictate the use of dual seat F-16 trainers and mandate an instructor pilot fly in the back seat in certain sorties. The syllabus has to be structured so that the student is not overwhelmed by the training and is able to safely accomplish the training tasks without a safety monitor in the aircraft.

In contrast, the RAAF classic F-18 training program has eighty percent of its sorties flown in a two seat aircraft with an instructor in the back seat. The significance of this difference is that after graduation all USAF F-16 and RAAF Classic F-18 flying will be accomplished single seat. The RAAF adopts a different training philosophy by ramping up the training intensity in the early stages and pushing the student to the very limits of their ability with the understanding that if the student is pushed too far that there is an instructor in the back seat to step in if a dangerous situation develops (William, 2001). I will compare and contrast this unique difference in culture, which is important because the end result of both programs is a single seat fighter pilot.

These subtle differences in training philosophy are not something that can be easily researched in academic journals or typical academic means. Therefore, I expanded my search to include lectures, conversations, stories, and programs to present a more comprehensive understanding of the importance of a unique fighter pilot culture that impacts the development and execution of the fighter pilot training syllabus. The goal is to use additional resources to compliment the more structured policy and training research concerning PFT, PET, and learning theory.

Theoretical Guidance

PET and PFT Frameworks

The difference in approach to this study compared to earlier PFT and PET studies exploring the GI Bill, refuge assimilation, and tobacco reform is that there is an effort to synthesize several popular models of studying public policy rather than examining public policy models as discrete or linear processes (Baumgartner & Jones, n.d.; Mettler &

Welch, 2014). Goss (2010) advocated the importance of developing multi-aspect models when examining policy feedbacks and argued that many earlier policy studies focused on sections of policy phenomenon in a linear fashion and did not synthesize constructs from differing theoretical perspectives to better understand the policy process. Cairney (2013b) went so far to say that restricting the collaboration of different frameworks within the qualitative inquiry by trying to develop rigid scientific testing standards in the study of policy may harm future understanding of the policy process. Furthermore, there is a problem when the study of public policy is divided into groups of scholars studying different parts of the same process (Baumgartner & Jones, n.d). For example, the evolution of the GI Bill, Medicare, welfare reform, and tobacco reform are all examples that show both positive and negative policy feedback loops during slow and fast change (Baumgartner & Jones, n.d.; Mettler & Sorelle, 2014). Examining the events within the policy feedback process during stable and dynamic events is the means in which one may study public policy while using the PFT and PET models cooperatively. Furthermore, a thorough understanding of public policy should include an awareness of the impact of institutions and individuals in structuring behavior; but that behavior is subject to occasional change under certain circumstances (Givel, 2010; Goss, 2010; Patashnik & Zelizer, 2010).

Learning Theory and Training Techniques

Learning style theory in the academic community and what are the best training techniques within the fighter pilot community are both controversial topics (Coe & Schmitt, 1997; Kavale & LeFever, 2007). There are many learning style theories and two

of the most researched are Kolb's (1984) experiential model and Fleming's VARK model (Kavale & LeFever, 2007; Manolis, Burns, Assudan, & Chinta, 2013; Romanelli et al, 2009). Fleming's VARK model is used in this study as a means of comparing the F-16 and F-18 training programs. Although the research to support claims of the VARK model is inconclusive and other learning style theories could be used it is important to note that many western fighter training programs structure curriculum too include many aspects of the VARK model (Hampton, 2013). Therefore, the model provides a useful tool to dissect the training events for comparison between the F-16 and F-18 programs and meets the needs of the study design.

Fighter Pilot Culture

> Fighter pilot is an attitude. It is cockiness. It is aggressiveness. It is self-confidence. It is a streak of rebelliousness, and it is competitiveness. But there's something else - there's a spark. There's a desire to be good. To do well; in the eyes of your peers, and in your own mind. (Olds, , n.d.)

Robin Olds was one of the most famous USAF fighter pilots from World War II and the Vietnam War. His legacy continues to impact the fighter pilot community today (Hampton, 2014). Based on the dangerous nature of tactical flying there are many written and unwritten rules, codes, and standard practices that are common in fighter pilot organizations. This study was not designed to focus extensively on fighter pilot culture; however, an introduction to the topic is important in understanding how and why many fighter pilot training programs are structured the way they are. Hampton (2013, 2014) and Olds (2010) explained that the fighter pilot community is ultra-competitive and much

of its training requires direct and often brutal feedback while under intense pressure. As a result of the stressful environment many fighter organizations have complicated social dynamics that ultimately impact the training process. This study will seek to explore some of the cultural dynamics that influence fighter training policy.

Previous Research

Theories. Many of the current studies reviewing PFT and PET are singular case studies. Unfortunately, no military studies of training programs that addressed PFT or PET could be located. However, topics to include Medicare, welfare, GI Bill, and the civil rights movement were explored to review the PFT and PET concepts within other domains of public policy (Baumgartner et al., 2014; Cairney, 2013a; Givel, 2010; Mettler & Sorelle, 2014). The underlying themes within each of these studies was of a continuum of policy feedback loops that influenced future policy by shaping and influencing the actions of stakeholders with the need to explain sporadic and unpredictable radical change. For instance, a GI Bill study was used as an example of how introducing the GI Bill following World War II gave veterans new opportunities that may have increased the percentage of veterans that became politically active in their respective communities (Mettler & Sorelle, 2014). However, there is an argument that the policy process is more complex than the PFT model and that punctuated events need to be considered (Givel, 2010). This study explored how policy feedbacks within the fighter pilot training community influenced current policy and may shape future policy while recognizing the need to account for punctuated events that could rapidly change training policy.

The multi-case study is a valid research design used by scholars to study the policy process (Yin, 2011). For example, Allerdice (2011) conducted a multi-case study comparing the validity of PFT during Sudanese immigrant experiences in the United States and Australia. Allerdice (2011) explained that the Sudanese immigrants received different feedbacks from Australian and United States stakeholders, which directly influenced the immigrants' political participation in each respective country. My study attempts to explore two policy theories within a multi-case study to see if expected outcomes are complemented by the synthesis of each theory within the policy process in a real world scenario. The Australian and United States multi-case comparative study of Sudanese immigrants is good validation of the utility of the proposed model. However, the variables are very different and the Sudanese study will not be used as the primary blue print for this multi-case study.

Although many current public policy studies focus on the exploration of a singular theory many researchers are now advocating exploring the policy process from a multi-faceted approach to further develop the policy process from multiple viewpoints (Cairney, 2013a; Givel, 2010). Givel (2010) cautioned that approaching and evaluating singular policy theories would likely oversimplify or limit understanding of extremely complex relationships between multiple variables and strengthens the argument for the importance of multi-faceted perspective.

An additional consideration is the use of learning theory as a classification tool for the development of the study. The VARK model is controversial with many authors having argued that there is limited empirical evidence to suggest that developing

curriculum based upon learning models is effective (Kavale & LeFever, 2007; Panshler et al., 2008). However, despite the criticism the education community frequently uses the VARK model and other learning style theories to guide the education development process (Romanelli et al, 2009; Smith, 2010). The utility of the VARK model in this study is not used to justify or refute learning style models but to use the concepts as a basis of comparison to understand the instructional processes within the RAAF and USAF fighter pilot training curriculums. This allowed me to evaluate how the instructional styles, fighter pilot culture, and political environment impacted the resulting training policy.

Based on previous research there is reasonable evidence to suggest that PET and PFT partially explains the development of and execution of public policy (Baumgartner et al., 2014; Mettler & Sorelle, 2014; Sabatier & Weible, 2014). What has not been examined specifically is how fighter pilot training policy is developed and what impact the policy, culture, and political environment plays in the development of new policy in the USAF and RAAF fighter community. Before examining the USAF F-16 and RAAF F-18 training policies it was helpful to review previous training policy and training studies.

Training policy. There was a consistent theme within current aviation training policy literature, which focused primarily on a need to change existing training policy based on technological improvements to aircraft systems and avionics. The airline industry and military have both taken many steps to incorporate Crew Resource Management (CRM) training at the earliest opportunity during training to focus not only

on the skills of flying but also on the decision-making processes in aviation (Matton, Raufaste & Vautier, 2013; Prince, Oser & Salas, 1993; Rigner & Dekker, 2000). The reason for this is many of today's aviation accidents are not the result of poorly performed maneuvers or decisions but instead are typically the result of a loss of situational awareness (SA). The loss of SA is based on misunderstanding the aviation environment, which led to a series of poor decisions that ends in a safety incident (Matton et al., 2013). There is an overwhelming amount of information to process in today's aircraft that it is very easy to misinterpret the surrounding environment and make dangerous decisions based on incorrect identification of the problem (Matton et al, 2013). The airlines have taken steps to introduce a CRM process in the cockpit to help aircrew identify problems early and work together as a team to manage the aircraft systems to improve safety. This potentially comes at a price as less resources are devoted to basic aircraft flying skills and more of a focus on systems management of the aircraft (Casper, Geven, & Williams 2013).

The USAF F-16 and RAAF F-18 communities deal with very similar issues because although the basic aircraft have not changed, the system capabilities, additional sensors, and improved avionics have drastically changed the pilot's cockpit tasks (Hampton, 2014). Compounding the challenge is that the F-16 and classic F-18 are single seat aircraft so many of the CRM processes adopted by the airlines have been modified to apply between a flight lead and a wingman (Hampton, 2014). The result of these new challenges is that training policy authors are trying to find new ways to improve aircraft system management and ultimately SA without sacrificing basic aircraft handling skills.

Banbury, Dudfield, Hoermann, and Soll (2007) attempted to quantify the importance of SA training in improving aviation safety by developing a factors affecting situational awareness (FASA) questionnaire to administer to pilots following a SA training program compared with a control group that had not received the training. They found the process to be successful and that the SA training improved pilot performance.

The USAF has also conducted studies to assess the validity of improved simulator training such as the Distributed Mission Training (DMT) and the Distributed Mission Operations (DMO) concepts as ways to expose pilots to more complex scenarios than a pilot might encounter in combat or during emergency situations that cannot be realistically replicated during training missions or in the class room (Chapman & Colgrove, 2013). The results of the studies have influenced the USAF to expand its training policy to more heavily incorporate simulator training (Chapman & Colgrove, 2013). Additionally, the Polish and Swedish Air Forces have conducted independent studies showing the utility of simulator training in developing technical and decision-making skills (Kozuba & Bondaruk, 2014; Lunquist, 2015). The simulators have become so realistic that much of the knowledge that used to be reinforced through repetitive visual, auditory, and reading methods often referred to as "chair flying" can now be reinforced more efficiently in the simulator (Croft, 2012). It is interesting to note that the RAAF does not have comparable simulator capability to the USAF, which results in a different style of training policy because each air force has different training capabilities. However, much of the training policy currently being developed for the F-35 focuses

more extensively on simulator training which will play a significant role in the development of future training policy for both the RAAF and USAF (Insinna, 2014).

It would be easy for policy makers to dictate the need for more CRM, SA, and simulator training as they develop new training policy but implementation becomes much more complex. Casper et al., (2013) found that airline training often is conducted in repetitive ways that led pilots to study and execute maneuvers in a routine manner but when abnormal events were added without warning, pilot responses were less appropriate and much more varied. Training that has a more complete treatment of abnormal events is needed to help pilots practice recognizing events and applying the appropriate response. Another study was conducted on an individual's ability to deal with unpredictable environments as a case study for pilot training (Matton et al, 2013). The authors developed an individual differences test of multiple cue probability learning (MCPL) to evaluate expected performance from pilots. They found that poor MCPL performers experienced almost twice as many pilot training difficulties as better MCPL performers (44% vs. 25%). This line of inquiry is very similar to the learning theory discussion and although is beyond the scope of this study the findings and process could be used to improve future training policy with the advent of improved training tools such as better simulators and decision-making training.

Naidoo, Schaap, and Vermeulen (2014) also accomplished further work to measure and assess perceptions of the advanced aircraft training climates. This is an important consideration because it addresses how pilots received changes to training policy after there have been organizational norms established. Not only does this concept

address the challenges of developing training policy but also illustrates the PFT process as the researchers evaluated how previous policy influenced future policy. Many policy makers understand the need for a paradigm shift in training at the organizational level due to the increases in automation and having an ability to measure pilot perceptions is a new concept within the study of aviation training policy (Casper et al, 2013; Coe & Schmitt, 1997; Hampton, 2014). According to Naidoo et al., (2014) no prior scientific research has been published about the advanced aircraft-training climate. Another important attribute of the Naidoo et al., (2014) study was the examination of both the psychological and organizational culture of the organization. The authors used organizational culture to define the shared way in which members of the organization have learned to think about, perceive, and consider organizational issues, tasks, and problems. The psychological culture refers to the collective way individuals in the organization processed and reacted to changes in policy (Naidoo et al., 2014). Finally, the climate in the study referred to an advanced aircraft pilot's cognitive and psychological processing of the aviation environment as experienced within advanced aircraft. This study addresses both PFT and fighter pilot culture. It is interesting to note that Naidoo et al., (2014) were looking at the influence previous training policy and climate played in defining the training environment. This discussion point is closely tied to how my study evaluated the importance of fighter pilot culture during the establishment and administration of training policy.

Training programs. The following section is used to provide the reader with additional information concerning other fighter training programs that will not be used

during the comparison of USAF and RAAF training programs. The information is provided to show that many of the USAF and RAAF training policies are different from other US and allied fighter training programs. For example, one might ask why not compare RAAF F-18 training with United States Navy (USN) and Marine F-18 training for a more direct 4th generation training policy comparison? However, while reviewing USN F-18 training it is clear that much of the USN/USMC is more focused on maritime operations than the respective USAF and RAAF training programs. Some of the specific details of the Navy and Marine F-18 training include a 44 week course with 120 flight hours and a similar number of simulators following a building block approach (Carlson, 2011). The training order is transition training, formation flying, basic radar introduction, strike, close air support, and the air-to-air combat phase at the end of training, which is very different in USAF and RAAF fighter training programs. This information is provided as background as no specific research studies or USN and USMC training policy could be located for inclusion in this study

For comparison, according to Lindquist (2015) Swedish fighter pilot training began after pilots received approximately 280 training hours in basic aircraft. The fighter-training program included 4 months with 30 simulator hours, and 8 hours of theory lessons. Next there were 80 hours of tactical flying with a new fighter pilot graduating with approximately 110 fighter hours (Lindquist, 2015). It is important to note that Lindquist (2015) expected that there would be a need to completely change the training program when there are no longer two-seat aircraft available. This is also a concern with the USAF and the RAAF with the development of the JSF.

As previously mentioned, the Polish Air Force has also conducted research to evaluate the importance of simulator training for their respective flying programs. The Polish Air Force determined a formula of events that can be substituted in the simulator as a result of studies related to the transfer of knowledge and skills from the simulator to the aircraft. For example, the Polish Air Force determined that simulator training decreased time required to solo by 1.5 hours. They also found that full motion flight simulators did not add to the proficiency of the pilots and that the cost of motion simulators was cost prohibitive. The overall findings were that modern flight simulators drastically improve basic flight training efficiency (Kozuba & Bondaruk, 2014). The Polish Air Force uses simulators with a primary focus on improving aircraft handling skills needed for aerial combat and allows pilots to train in scenarios that are too expensive or too dangerous to do so in the air. All of the studies clearly showed a significant benefit to using flight simulators for skill development (Kozuba & Bondaruk, 2014). Situational awareness training was also considered a key portion of the simulator-training program.

From 1970-2004 70 percent of serious Polish Armed Force air incidents were the result of insufficient pilot SA (Kozuba & Bondaruk, 2014). The technological complexity of modern aircraft make it extremely difficult to maintain SA. Simulator training in order to build solid training habit patterns is important in training safety. The Polish training structure can be broken into flight maneuver training, procedural training, and tactical training (Kozuba & Bondaruk, 2014). As an example, further analysis done by the Polish Air Force found the simulators provided a high training effectiveness, maintained high

standards of training safety, ensured availability, provided a repeatable medium for pilots to practice likely airborne scenarios, and test new ideas and solutions. Furthermore, the simulator optimized financial resources, reduced number of hours flown by trainee, and helped the instructor focus purely on the trainee (Kozuba & Bondaruk, 2014). The disadvantages of the simulators included purchase price, insufficient level of environmental impact on the trainee compared to real world operations, shorter flight duration, and unrealistic radio traffic (Kozuba & Bondaruk, 2014). The benefit of the Polish training study and additional work on quantifying the effectiveness of simulators is that much of the USAF and RAAF training policy does not document similar studies to support the policy decisions. This is not to say that the decisions were made based on anecdotal evidence but instead to highlight that there are many nations trying to optimize their respective fighter training policy and there is an opportunity to leverage new training ideas from the efforts of partner nations.

Summary and Conclusions

This study combines multiple theories to explore the fighter pilot training policy process while accounting for the influences of culture and tradition within a unique population. PFT and PET are relatively new policy theories and much of the existing literature focuses on PFT and PET as individual phenomenon when exploring singular case studies. Cairney explained the importance of a more holistic approach to policy study in order to conduct a more thorough exploration of the policy process and I used a similar approach to study USAF F-16 and RAAF F-18 training policy.

There is a gap in the current literature as there has not been a study to specifically compare and contrast USAF and RAAF fighter training policy. This is important because better understanding of the policy process within the fighter pilot training community could provide policy maker's new methods to improve future policy. Understanding these dynamics may allow the fighter pilot community to seize new opportunities to improve fighter pilot training and apply the lessons that other coalition partners have learned in order to improve future USAF fighter pilot training.

The research gap provided me many opportunities to investigate the fighter pilot training policy processes. There is certainly scope for future quantitative research to isolate and measure the relationships between variables in future studies. However, a multi-case study focusing on F-16 and F-18 syllabi as the primary research document combined with exploration of fighter pilot culture, and dissection of training based on the VARK model provided me robust tools to explore current fighter pilot training policy.

In Chapter 3 I will describe how the study was constructed as a qualitative comparative multi-case study that examined training policy within the USAF and RAAF fighter training squadrons. I examined quantitative concepts but the study is primarily structured as a qualitative study.

Chapter 3: Research Method

Introduction

The purpose of this study was to compare and understand the differences between the USAF F-16 and RAAF F-18 introductory training policies, and my goal for the study was to develop a better understanding of the fighter pilot training policy development process. Considering the importance of this topic to national defense and the expense of fighter-training programs, a study designed to better understand current fighter pilot training policy development could help USAF leaders develop new policy that minimizes costs and maximizes capability.

In this chapter, I review the main research question and sub-questions, define the policy phenomenon, and explain the utility of a qualitative multi-case study that compares F-16 and F-18 training policy. I am a USAF F-16 pilot who served an exchange tour in a RAAF F-18 squadron. While most of the research came from source documents and third-party interviews, I provided personal perspective based on my experience in both the F-16 and F-18 programs. Furthermore, I explained how interview participants were selected from a convenience sample and then offer detailed explanation of the research process and abstracting methods I used to comparatively analyze primary training policy documents. The chapter concludes with a discussion of the required scholarly protocol to ensure all required ethical procedures were followed. These protocols ensure the integrity of the study, protect the participants, and ensure that the primary research questions were addressed through a credible, rigorous scholarly process.

Research Design and Rationale

In this study, I developed and then addressed the following central research question: What can USAF F-16 and RAAF F-18 fighter pilot training policies reveal about the best practices and optimal instructional approaches, to inform policy development and efficacy of future USAF and RAAF fighter pilot training programs?

Sub-questions:

1. How influential are current RAAF and USAF policy practices in shaping the development of future policy?
2. What training techniques are perceived to be most effective and efficient to train new fighter pilots as fighter aircraft technologies and training systems advance?
3. What impact will new technologies such as aircraft upgrades, simulator capability, and new aircraft have in shaping future policy?

PFT predicts that current policy will directly influence future policy, which could help explain the dynamics of USAF and RAAF training policy. However, PET predicts that occasional events can create drastic change in policy. The implementation of new technology such as the development of the F-35 program could provide a catalyst for fundamental change to both the USAF and the RAAF. There appears to be a dichotomy between how current RAAF and USAF training policy feedbacks influence future policy during large technological changes. A study investigating policy feedback, punctuated equilibrium, as well as USAF and RAAF fighter pilot culture, allowed for a comprehensive comparison of current USAF and RAAF fighter training policy.

This was a qualitative comparative multi-case study of the USAF F-16 and RAAF F-18 training programs. Although I discuss some quantitative concepts, the research questions were best explored from a qualitative perspective. Fighter pilot training is a mix of art and science; therefore, I explored some of the unquantifiable aspects of the fighter pilot community. For example, I explored the training program in conjunction with the fighter pilot culture that influences the evolution and implementation of the training program. The qualitative method allowed me to examine policy and cultural differences between two fully functioning training programs without the need to manipulate variables or be hindered by quantitative method limitations (Yin, 2011). It was important to have the flexibility to explore the topic with an open-ended format to facilitate the comparison rather than structure a quantitative study that would not have had the adaptability to explore the idiosyncrasies that define different training policies (Yin, 2011). The programs may appear very similar from a policy perspective, but from a cultural and implementation perspective the programs are very different, even if they follow similar models. The qualitative approach provided better tools to identify and explain these subtleties (Yin, 2011).

Role of the Researcher

I am a USAF F-16 weapons officer and instructor pilot. This professional experience included assignments as a chief instructor pilot at the USAF primary F-16 pilot training base as well as operational experience in front line USAF F-16 and RAAF F-18 squadrons in support of the global war on terror (GWOT). Additionally, I recently served a military personnel exchange program (MPEP) tour with a RAAF F-18 squadron

and have undergone the full RAAF F-18 introductory training program. My primary role as the researcher was to serve as the research instrument. The goal was to conduct the majority of the research through comparative analysis of primary F-16 and F-18 training policy documents, as they are the most stable and comprehensive data sources available. However, there are many cultural idiosyncrasies, conflicting instructional strategies, and unwritten rules that define and impact the development of a new fighter pilot. For example, a brand-new fighter pilot, affectionately called a “punk” in the USAF and a “bog rat" in the RAAF, is expected to not only learn the required skills to fly highly maneuverable supersonic aircraft but also must learn to navigate the social dynamics of a fighter squadron. In this study, I primarily drew upon third party interviews, informal communication, and the writings of previous fighter pilots to explain these dynamics. However, because of the many differences between the language and expectations of USAF and RAAF fighter pilots, I interpreted and then translated these differences to facilitate consistent data collection and effective analysis. The qualitative approach allowed for the collection and analysis of policy and program information without interfering with the operation of the current fighter training programs. However, I bring a degree of personal bias to this translation because I have spent the majority of my professional career in the USAF fighter pilot system and only a couple of years in the RAAF system.

An important consideration to note when reviewing the USAF F-16 and RAAF F-18 community is that both are relatively small when compared to the DoD community at large. Further, I am now a part of both the USAF F-16 and RAAF F-18 communities.

Each organization operates in a closely-knit, high-stress, competitive environment, and it would be impossible to mitigate all of the personal relationships and potential for bias within the study. However, many books and articles written by outsiders concerning the fighter pilot community do not always capture the context and rationale for many of the common practices within fighter squadrons. I am not using this discussion as a sounding board to justify or argue against many of these dynamics, but only to highlight this unique position to explain the dynamics of the USAF and RAAF fighter communities to a wider audience.

I am not currently serving in a primary leadership role in the RAAF and have recently returned to the F-16 community after several years. Many of the supervisory and instructor-to-student relationships or other power differentials that would have been a concern during previous assignments were minimized based on current circumstances. As I mentioned in Chapter 1, I managed personal bias primarily by focusing the study on policy documents.

A challenge during development of this study was gaining appropriate approvals from the RAAF and USAF to conduct interview research and to use current training policy documents. Fortunately, a primary goal of the U.S. military exchange program is to develop relationships, improve communication, and improve the joint capabilities of our trusted allies. The study may indirectly further that end for both the USAF and RAAF and may contribute to policy scholars understanding of the policy process.

Methodology

Document Selection Logic

The primary data collection sources for this study were the USAF and RAAF introductory course syllabi, which are the authoritative policy documents for each fighter pilot training program. The documents provided course prerequisites, administrative issues, course methodology, training structure, resource allocation, and course timelines. The syllabi were essential in order to compare the programs. Additionally, the USAF AETC and the RAAF equivalent organizations are the parent command structures that are ultimately responsible for the administration of the courses. Each command publishes additional policy documents beyond the syllabus to administer the course. These documents were not reviewed during this study due to access limitations. After I had conferred with the RAAF F-18 training commander, he requested that I would not fully disclose the syllabus and the RAAF training model to prevent potential adversaries from gaining a full picture of the Australian training psyche. In the spirit of this request, I do not document the specific training locations or policy document names, and have maintained the confidentiality of all interviewees. Furthermore, I did not have access to the sortie-specific details of each training sortie that addresses specific tasks such as weapons events or specific fighter tactics. These details were not necessary to address the research questions because I was primarily focused on policy considerations rather than tactical details. Many of the inconsequential details of course administration were not highlighted in this study. However, most of this information is at the “unclassified” and the “for official use only” level of classification. Therefore, future researchers should

contact me with any specific questions concerning access to or classification status of relevant USAF and RAAF documents.

A study of RAAF and USAF training policy would not be complete without the perspective of participants who have experienced the training. In the following section, I explain the rationale for selection of a cross section of F-16, F-18, and exchange pilots that brought a different perspective of USAF and RAAF fighter pilot training.

Participant Selection Logic

The research population included current USAF F-16 and RAAF F-18 pilots, and a mix of exchange pilots who have undergone fighter pilot training in at least two different air forces. The sampling strategy included a convenience sample using a written interview instrument. The study included two RAAF F-18 pilots, one RAAF instructor pilots, three USAF F-16 pilots, two USAF F-16 instructor pilots, one USAF F-15E pilot who served as a RAAF F-18 pilot, and one RAAF F-18 pilot who served as a USAF F-22 exchange officer. This convenience sample was chosen to maximize a specific experience cross section to provide additional context to support and expound upon the policy documents I used in the study. The small sample size was intentional because the pilot perspective was not the most important aspect of this study but instead the policy process, as described in the policy documents, was the fundamental component of this study. Additionally, during negotiations with the RAAF Squadron commander, he agreed that 5 to 10 interviewees would be an acceptable number to interview without any negative consequences.

I contacted the participants through email and they were given a 10-question open-ended interview sheet (Appendix C) to provide their perspective on the F-16 and F-18 training policies. The questions were designed to take no more than 30 minutes to complete. I did not discuss the questions or my personal opinions prior to administering the questionnaire. The participants were allowed to keep their answer sheets, and findings were validated through a follow up email to ensure an accurate interpretation of the participants' responses was reached while providing the participants the opportunity to add, expound upon, and clarify any of their responses to the interview questions. It is important to note that Question 10 was an optional free format section to allow the pilots to expound upon any other fighter pilot training, culture, or policy issues they would like to address. This type of data collection highlights the benefit of a qualitative case study approach to gather additional information that may or may not be tied directly to the research questions (Yin, 2011).

Instrumentation

Atlas.ti qualitative analytic software was used to collate and code the abstracted data from the policy documents referenced in Appendix K. It was also used for the development of additional visual graphics to further illustrate and present the findings and analysis from the research process. The RAAF and USAF have standardized publication, regulation, and instruction systems that are used to administer its programs. Atlas.ti allowed for the collection and display of the resulting data that was used for analysis and the results section of the study. For example, PFT, PET, learning theory, and fighter pilot culture were used as coding categories for the data collection.

The USAF and RAAF documents are the most reputable sources for the comparison because they are the most stable, least likely to contain individual bias, and clearly document the direction and methods used to administer the programs. How the coded data was used to address the research questions and an explanation of why the documents were sufficient to develop a comparative study is outlined in this chapter. However, there are elements of fighter pilot culture that are not addressed within the policy documents and a different data collection method was required to address this topic.

The 10 question electronic interview Word document was used as a qualitative data collection method to provide cultural context through a narrative format to better understand the training programs and capture similarities and differences in each program. A coding worksheet was used to consolidate themes extracted from the participant response documents. Using only the policy documents or the interview results alone would not provide the richness of data needed to address the research questions as they apply to fighter pilot training policy. However, the integration of all data sources provided sufficient information to conduct the analysis, formulate conclusions, generate new questions, and open the door for future research.

Procedures For Recruitment and Participation

The first step in the data collection process was gaining permission from the USAF and RAAF to use the previously introduced policy documents. I coordinated research approval from the USAF Operations Group Commander (Appendix J) and Air Education and Training Command (Appendix G) to use the policy documents. The USAF

requires strict approval and control methods for non-sanctioned survey research, involving USAF personnel. The control authority is located at the USAF Research Oversight and Compliance Division in Washington, D.C.. Permission to conduct the written interviews on the selected participants and the required documents are attached in Appendix G. The RAAF required the same level of control to use policy documents and to interview RAAF members. The RAAF F-18 Training Squadron Commander (Appendix H), Air Combat Group Commander (Appendix K), and the Defence People Research Low Risk Ethics Panel (Appendix L) each consented for me to use RAAF policy documents and research RAAF pilots.

The procurement of the required policy documents required RAAF and USAF unclassified network access. I used my personal system access to obtained the required data; however, none of the documents will be released outside of the US and RAAF DoD systems. The recruitment and follow up with the previously stated research participants occurred over secured email.

Data Collection and Analysis Plan

In order to address how each research question was examined it is helpful to review the central research question and each sub question.

The central research question is: What can USAF F-16 and RAAF F-18 fighter pilot training policy reveal about the best practices and optimal instructional approaches, to inform policy development and efficacy of future USAF and RAAF fighter pilot training programs? I will begin the discussion by examining sub-question number one.

1. How influential are current RAAF and USAF policy practices in shaping the development of future policy?

Sub question number one was addressed primarily through examination of the primary policy documents. A review of the stability of the current training programs from a content, technological, methods, and budgetary perspective was undertaken. For example, policy feedback theory is a central tenant in the study and I examined if prior policy documents influenced current policy documents and at what pace the evolution in training practices have occurred. For example, with development of improved simulator capability, has the training evolved to take better advantage of these new kinesthetic learning tools or have more traditional auditory and read write academic techniques dominated the training structure? In addition to the well documented data in the policy documents, question numbers one, two, six, eight, and ten on the interview sheet will allow pilots to share their perspective on the stability of the program and the impact of fighter pilot culture on its execution. Sub-question number one is oriented towards a larger policy perspective in contrast to sub-question number two which is focused on the course content and execution.

2. What training techniques are perceived to be most effective and efficient to train new fighter pilots as fighter aircraft technology and training systems advance?

Data collection for sub-question number two was composed of a coded classification system based on the VARK model of learning. For example, syllabus events that are primarily visually oriented such as power point presentations and graphs

were coded as a visual event within each syllabus. Simulators were coded as kinesthetic events. This coding was fairly simple and was entered and stored in Atlas.ti to facilitate the program comparison.

Additionally, interview question number one, five, six, and nine addressed RAAF and USAF training philosophy differences. For example, are the RAAF or USAF courses designed to remove all students that cannot meet a strict standard on a specific time line or is there the ability to tailor instruction to the individual needs of students? Also, the comparison addressed differences in training timelines. Considering the content in each course has grown with the addition of new technological capabilities the study addressed how the USAF and RAAF have dealt with those changes. Comparing these issues required an in-depth examination of the policy documents and an interpretation of the responses to the interview questions.

3. What impact will new technologies such as aircraft upgrades, simulator capability, and new aircraft have in shaping future policy?

Research sub-question number three addressed projected aircraft, simulator, and the F-35 program development. Due to the fact that this question addresses future capability rather than established policy the data collection was focused on planning documents and real-time data collected in the interview questions. Interview question number five, six, and nine requested pilot input for how policy is developed and administered.

Finally, the main research question was addressed through integration and triangulation as described by Yin (2011) in the previously described collection and

analysis section. The primary data collection methods that addressed research sub-questions one through three provided the required data to address the following main research question. What can USAF F-16 and RAAF F-18 fighter pilot training policy reveal about the best practices and optimal instructional approaches, to inform policy development and efficacy of future USAF and RAAF fighter pilot training programs? The study was designed to address the primary research question through the compilation of data and information obtained while addressing the three sub questions. Therefore, the data collection methods previously discussed were fundamental to addressing the primary research question.

In summary, data collection and the document review focused primarily on current policy documents. However, current policy documents highlight where changes have been made to that document. out-of-date publications were reviewed in order to gain a better understanding and context for major changes in the current document but out of date publications were not the focus of the study. The interviews were emailed once approvals were complete, and the participants filled out the data following review of the instructions and completion of the consent form shown in Appendix B. Additionally, the data was coded in Atlas.ti., which was used as the main data collection and analysis system for the study. Chapter four and five discuss minor changes to the data collection. Finally, it is highly likely that policy documents for this study will change prior to publication of this document because the USAF publications are on a two-year update cycle. This is an expected part of the policy process and I will not recollect data based on periodic changes to the program.

Issues of Trustworthiness

I triangulated from multiple policy documents in order to analyze each respective policy process in order to ensure a credible and thorough comparison. Additionally, the written interviews provided an element of validation in that other military pilots that have experienced the respective training programs had the opportunity to explain their understanding of the current policy process and the training programs. The perspective of the additional pilots helped ensure any internal biases did not disproportionately skew the interpretation of the data and reporting the results. The interviews were conducted in a written format because this study is an international under taking. Face-to-face interviews could have been used; however, written data provided the most standardized and consistent information because of the more pronounced differences in verbal communication styles between USAF and RAAF members compared with written communication.

The most important measure of credibility in this study was in the evaluation of the policy process and outcomes. The differences in Australian and U.S. culture and language are less pronounced in written, as opposed to spoken, communication because the western writing style is very standardized. For example, a verbal lesson from an Australian fighter pilot is much more difficult to interpret considering all of the informal communication styles of body language, inflection, and sarcasm that dominates the Australian culture. However, the Australian written publications strip all of the non-verbal and most of the informal communication techniques that can confuse U.S. members. What is left is a standard military communication style that is similar to

American writing standards which allows for an easier comparison of the American and Australian training programs. Additionally, the members were provided a summary of the findings, interpretations, and recommendations in order to ensure an accurate interpretation of their responses and intent to the interview questions.

The transferability of this study to an additional international fighter pilot training comparative analysis should be easily achievable. This study lends itself to future studies between USAF and Navy, Marine, Canadian, or other allied nation-training programs. However, if one were to examine USAF training policy compared to Russian or Chinese training then additional modifications may be required. This is not to rule out the utility of comparing western training programs to other training programs but instead to highlight the established precedent of cooperation and collaboration between many western militaries (Hampton, 2014). Finally, the basic constructs of the qualitative multi-case study used in this study should allow for similar modeling when comparing other organizations. In fact, this study was modeled from previous single case and multi-case studies developed by Maldonado (2015) and Allerdice (2011) that meet the scholarly case study integrity defined by Yin (2011).

This study is designed as a stepping-stone to further DoD training policy research and provides a simple method of scholarly comparison that is useful to scholar practitioners. The study was developed to both develop new knowledge in the field of policy research and to provide further insight for current policy makers who will continue to redefine fighter pilot training policy in the future. The convenience sample used in this study was strategically selected in order to maximize the breadth of experience of

participants that will provide perspective to the policy document analysis. The study ensures conformability to scholarly standards by using a qualitative method of inquiry that allows for increased flexibility for future researchers to apply the selected research methods to future policy phenomena.

Ethical Procedures

The data collection plans for this study meets all required permission standards for data access, information sharing, and participant confidentiality and protection. Permission to use USAF and RAAF policy documents have been coordinated and approval documentation is provided in Appendices G, H, I, J, K and L. The primary concern was ensuring that classified information was not released. I was aware that combining multiple pieces of unclassified information can lead to revealing information that the USAF and RAAF did not want released or at worst that disclosed classified concepts. I was mindful of this concern and ensured only unclassified information was used during data analysis and reporting.

I planned to interview 10 participants for this study and each signed a consent form (Appendix B). The forms were distributed over military email systems, which required password, or data encryption, which helped validate that the correct individuals received and returned the required documents. All though their experience level was documented, no other personally identifiable information was included in the study and these protections ensure confidentiality for the participants. The interview consisted of open-ended questions so there is no concern of participant manipulation and the questions were designed in a format to merely seek the opinions of the participants.

A final ethical concern was the fact that I am a USAF member who also flew in the RAAF. I maintained professional relationships with all of the participants except for Group C and these relationships may have impacted the individuals' responses. However, the document review data collection method helped to mitigate this concern and there were no power differential concerns that impacted the study. Having served as a proud guest in the RAAF I had the best interest of both the RAAF and USAF in mind and conducted the study in order to meet the desires of each organization.

Summary

The purpose of this policy study was to compare and understand the differences between USAF F-16 and RAAF F-18 introductory training policies. This chapter explained the goals for the study and explained how the study was structured to address the research questions. The procedures that have been put in place to ensure the validity and trustworthiness of the study were also explained. The study was designed for the scholar practitioner that is both attempting to acquire new knowledge and to identify ways for policy makers to improve future policy. The study was important to facilitating social change as the focus was on policy improvement in order to improve national defense capabilities while minimizing the financial cost to U.S. citizens.

Chapter 4: Results

Introduction

The purpose of this qualitative study was to compare and understand the differences between USAF F-16 training and RAAF F-18 training in order to better understand the policy process and provide new information to fighter pilot training policy makers. The primary research question was: What can USAF F-16 and RAAF F-18 fighter pilot training policies reveal about the best practices and optimal instructional approaches to improve policy development and efficacy of future USAF and RAAF fighter pilot training programs? I also addressed the following sub-questions to further explore the primary research question.

Sub-questions:

1. How influential are current RAAF and USAF policy practices in shaping the development of future policy?
2. What training techniques are perceived to be most effective and efficient to train new fighter pilots as fighter aircraft technology and training systems advance?
3. What impact will new technologies such as aircraft upgrades, simulator capability, and new aircraft have in shaping future policy?

In this chapter, I review the study design and highlight minor changes from the research plan presented in Chapter 3. Most importantly, I present the primary data collected in the study. The primary data sources were archival USAF and RAAF syllabi and 12 email interviews administered to USAF and RAAF fighter pilots. Additionally, I

present my coding strategies and explain the setting, demographics, and data collection and data analysis processes. I also explain the controls used to ensure trustworthiness of the research and results and conclude with an explanation of how my study results relate to the research questions.

Setting

The primary data sources for this study were the USAF F-16 training syllabus and the RAAF F-18 training syllabus. The F-16 training process continued to evolve throughout the duration of this project. For example, the F-16 syllabus is normally updated in a 2-year cycle. As a result of a DoD identified fighter pilot shortage, there was an initiative to shorten the course by consolidating several of the training events. The amendment to the syllabus was called the Expedited Training Program (ETP). This change highlights the evolutionary nature of the fighter pilot training programs. Despite full access to USAF documents, it is important to note that my access to the Australian F-18 syllabus was restricted because I am not a member of the RAAF and no longer have access to policy changes. Additionally, I left Australia in 2016 having received permission to use information from the current syllabus at the time, dated 2014. Unfortunately, changes in duty assignments do not allow me access to any future RAAF syllabus updates. However, I conducted the electronic interviews with RAAF pilots in the spring of 2017, which helped highlight some of the minor Australian cultural and policy changes in the last year. My primary aim in this project was to study the policy process rather than to compare the syllabi content. Therefore, the fact that I did not have access to

the most recent Australian changes had limited impact on the overall effort to answer the research questions.

The secondary data sources were responses from 12 fighter pilots concerning fighter pilot training policy and culture. The 10-question email interview (see Appendix C) was designed to encourage fighter pilots to provide open-ended responses. A key component of the data collection instrument was to encourage the fighter pilots to provide their opinion concerning how best to develop future combat pilots. There is potential that participant responses were influenced by my professional relationships with them. Additionally, I have maintained personal relationships with two of the fighter pilots beyond the professional duty assignment in Australia. Three of the interviews were from anonymous USAF F-16 student pilots whose identity needed to be withheld because they were still in the F-16 course. Although the role as a researcher may have had a limited impact on the interview responses, it is also important to note that my ability to get unbiased, honest, and direct responses from the fighter pilots was because of ongoing relationships with them. The fighter pilot community has a unique culture, built upon trust that is often exclusive.

Demographics

Syllabi

The primary data sources for this study were the USAF F-16 training syllabus and the RAAF F-18 training syllabus. The Walden IRB, USAF, and RAAF required approval documentation is attached in the respective Appendices at the end of this document. The 2014 RAAF and 2015 USAF syllabi were used for this study. The next releases are

expected in 2017 and the data will not be updated with the publication of subsequent syllabi updates. However, the USAF did release an exception to policy (ETP) addendum to the F-16 syllabi in 2016. I thus reviewed this ETP in conjunction with the 2015 syllabus. However, RAAF approval to use their course information was limited to the 2014 syllabus. In the study, I was focused primarily on the policy development and improvement process, and the 2014 syllabi coupled with the electronic interviews provided the information needed to conduct the study.

Electronic Interviews

The demographics of the 12 interviewees were seven USAF and five RAAF members. The members were emailed on their official military email accounts (except for Group C explained below), which are on password protected (RAAF) or encrypted systems (USAF). I chose the members from a convenience sample. There was an IRB concern that I may have future influence on three of the pilot interviewees. As a result, I developed and implemented an anonymous collection procedure, which I explain later in this section (Group C). The data collection form was an email questionnaire (Appendix C). The members emailed their responses, which I kept on a secure system. RAAF and USAF pilots were selected based on specific experience levels and qualifications, which added perspective and context to the archival data analysis.

Interviewee Selection Criteria and Process

The demographics of the 12 interviewees were as follows:

Group A: Two RAAF F-18 Pilots. These pilots were members of my F-18 introductory flight training class. They are in the RAAF and remain on a peer level. I will

never have authority over them in the future since the exchange tour has ended. Although anonymous students would have been ideal, I did not have access to new RAAF pilots and would have strained the relationship with the RAAF to pursue them. Additionally, these F-18 pilots completed training under the 2014 RAAF syllabus, which is the primary RAAF source document for this study. Therefore, it was important to gain their perspectives. Additionally, it was helpful that I knew the students on a professional level and completed the training with them. Our common experience was helpful in understanding each pilot's perspective because of a shared lived experience and an ability to remember the trials and successes each endured during the training.

Group B: 3 RAAF Instructor Pilots. The same considerations applied to this group as those concerning Group A. These pilots were of the same approximate rank and experience level. I will not have future influence on the selected pilots because the professional exchange assignment has ended. The RAAF F-18 and F-35 instructor pilots' perspective was important because they had significant influence shaping RAAF training and the culture. Due to difficultly contacting several current RAAF F-18 instructor pilots, I recruited current RAAF F-35 instructors who transitioned from the RAAF F-18 in the past 18 months.

Group C: 3 USAF F-16 Pilots. This group caused the greatest concern because the pilots were new F-16 pilots, which meant I could have influence over this group in the future. It is unlikely that my supervisory duties will include members of this group, but it is not impossible. Therefore, Group C needed more detailed collection procedures. The protocol included contacting the student's squadron commander who administered the

anonymous survey to a class of 12 students. The commander and I do not know which students participated in the study. The students anonymously submitted the documents, and I deleted the documents from the common drive after the data was collected and coded in Atlas.ti.

Group D: 3 USAF F-16 Instructor Pilots. These three pilots were peers at my current F-16 base, and there were no concerns related to influence over these individuals in the future. Of note, one of the F-16 instructor pilots recently transitioned to the F-35, and adding this perspective was important to contrast with the RAAF F-35 instructor pilots who previously flew the RAAF F-18 (Group B) that were added to the study.

Group E: 1 USAF F-15E Pilot that has served as a RAAF F-18 Pilot. This pilot came from a pool of only two pilots. The pilot is a peer and flies another airframe, so I should have limited interaction with him in the future. The pilot's experience was important because it provided an additional perspective of the RAAF F-18 training that is different from the authors. My perspective is influenced by personal experience in the F-16, and I judged that it was important to gain the perspective of a USAF pilot who flew in the RAAF but had experience flying a different USAF airframe.

Group F: 1 RAAF F-18 Pilot who served as a USAF F-22 Exchange Officer. Due to an inability to interview this pilot, this type of experience was supplemented with the two additional RAAF F-35 instructor pilots previously discussed (Group B). Both of these RAAF instructor pilots flew the F-18 in Australia in the past 18 months.

Collecting the comparative data from the syllabi and the interviews was reasonably straightforward. The challenge was building the coding construct that would

allow for a beneficial comparison of fighter training policy. In the next section, I explain that process.

Data Collection

The USAF F-16 and RAAF F-18 training syllabi as well as the responses to the twelve fighter pilot interviews were loaded into Atlas.ti. The data collection required one month to code and interpret the data within the syllabi. The interview processes took three weeks to send the questionnaire, allow for interviewees to respond and return the questionnaire and then to code the data in Atlas.ti. Additionally, the data from the syllabi was imported into Microsoft Excel spreadsheets to compare and contrast the training requirements. Tables and charts were developed to visually illustrate the comparative data. Specific data on numbers of events, flight hours, sortie numbers, and other comparative details were analyzed. However, the comparison data will be shared as visual bar graphs and percentages and will not include raw data due to security concerns from the USAF and RAAF. This is a policy study and as such I focus on the policy process and relative training composition rather than specific syllabi details and numbers of training events. This also serves another purpose to ensure my research remains at an unclassified level and does not blur any lines in the often-confusing classification of For Official Use Only (FOUO) used in both the USAF and RAAF. However, the comparative differences in the syllabi were helpful in better understanding and analyzing the fighter training policy process. The only change to the collection plan in Chapter 3 was the inability of the researcher to interview the RAAF F-22 exchange pilot. As discussed, an additional USAF F-35 instructor who was previously an F-16 instructor and two RAAF

F-35 instructors who previously flew the F-18 were added. There was a total of 12 interviews instead of the 10 interviews expected in Chapter 3.

Data Analysis

There were a total of eight codes used during data collection and analysis. The primary codes were punctuated equilibrium theory, policy feedback theory, and fighter pilot culture. An additional code of learning style theory was used for generic information that related to learning style concepts. There were four sub-codes labeled learning style theory auditory learning, learning style theory kinesthetic learning, learning style theory written learning, and learning style theory visual learning. The added level of learning style type specificity was needed to further define many of the concepts observed in the primary documents and within the interview responses. Punctuated equilibrium and policy feedback theory were further developed as the primary comparative themes and the analysis of fighter pilot culture helped to provide context when classifying key policy events into the PET and PFT categories. There were instances when each respective learning style sub-code was used to show evidence of PET, PFT, and even to further explain fighter pilot culture. There was an overlap of themes across the entire coding process; however, PET and PFT remained the primary categories used to classify data.

Evidence of Trustworthiness

Credibility

The most consistent data in this chapter was taken from the respective syllabi. These are published policy documents that are the most stable and are designed to communicate the policy directly and succinctly. Therefore, the majority of data collection

for this study was focused on exact content of the policy documents. The problem with this data collection scheme was that the Australian syllabus was written as a training guide and was not as a complete policy document as is the USAF F-16 syllabi. The RAAF may have similar policy documents; however, the researcher was not granted access to further policy documents for this study. Therefore, additional interviews were important to provide additional context, understanding, and perspective of the RAAF syllabus events. The interview research was used to provide additional information on a universal fighter pilot culture as well as the culture differences between the USAF and RAAF fighter pilot organizations. The synthesis of these similar but also at times conflicting data sources was needed for this study because it was important to accept a holistic view while exploring this topic. Therefore, interviews were also needed to not only understand the fighter training policy but also to understand the culture and norms of the fighter pilot community. A better understanding of the fighter pilot culture helps to explain how and why fighter pilots develop and implement training programs.

Transferability

Although this study was focused on USAF and RAAF fighter pilot training policy it also established procedures to develop similar studies of other types of training policy. Examining both the policy documents and cultural aspects of the respective organizations provided a means to evaluate additional training programs. This study primarily explored the policy process from a PFT and PET perspective. The same procedures could be used to collect data and then analyze the data from other policy perspectives and training theories. Some of which will be discussed in Chapter 5.

Dependability

The procedures to ensure dependability were not changed from Chapter 3. However, it is important to highlight that an F-16 pilot collected and interpreted the data. Although, there are risks to dependability based upon personal bias, personal experience may have provided an opportunity to examine the two programs and then translate those differences into a useful, comparative language. However, the process used for data collection is repeatable and it would be fascinating to see the results if different researchers with different professional experiences would reach different conclusions from a similar fighter training policy comparison.

Confirmability

There were no changes to the confirmabilty strategy discussed in Chapter 3. As a summary, the respective syllabi provided the most direct data for the study. The syllabi are intended to directly communicate the training policy to the administrators of each program and therefore meet the requirements of confirmability for this study as described by Yin (2011). The fact that each of the members interviewed were current fighter pilots also helped explore the cultural aspect and confirm where the syllabi continue to be relevant and where segments of the fighter pilot population believe there needs to be a change. The blending of two different data collection methods in this study was designed to improve the confirmability and understanding of fighter pilot training policy by cross checking the information from each respective source during the analysis and interpretation of the information.

Results

Findings of the Primary Research Question

The primary research question is what can USAF F-16 and RAAF F-18 fighter pilot training policies reveal about the best practices and optimal instructional approaches to improve policy development and efficacy of future USAF and RAAF fighter pilot training programs?

The USAF and RAAF training programs are very similar with regards to structure, flight hours, timeline, weight of effort, and instructional techniques. For example, each course is currently six months long, consists of a conversion, air-to-air, and air-to-ground phase. The conversion phase focuses on how to take off, land, aircraft handling, and emergency procedures. The air-to-air phase begins with basic dog fighting and progresses to larger 4 versus 8 air combat scenarios. The air to surface phase includes sorties dedicated to precision and non precision air to ground weapons as well as large force exercises that include combined air to air and air to surface training. The sequence of academics, to simulator training, to flight training is also consistent across each program. The end result of the training course is a wingman fighter pilot that will receive additional training once he or she arrives at his or her operational unit.

During the coding process of the syllabi and the fighter pilot interviews it was clear that the previous policy had a significant impact on future training policy and that change was typically a slow and deliberate process. The overall training structure has changed very little and policy feedbacks appeared to significantly limit drastic policy changes within the two year syllabus revision cycle. However, events such as the current

USAF fighter pilot shortage and maintenance issues accelerated USAF out of cycle training and policy changes. For example, in 2015 an Exception To Policy addendum was added to the USAF training program in order to shorten the course. Additionally, the course was redesigned to still fully complete the training in a single seat aircraft. This was because during the syllabus period the entire fleet of F-16 two-seat aircraft were grounded due to maintenance problems. This was an example of a punctuated event that forced a rapid change. Once the maintenance problem was fixed the USAF started using the two-seat aircraft again but have retained the option to complete the single seat syllabus if it is required again in the future. In fact, one F-16 instructor pilot commented the USAF should transition to a "true C-Model (single seat) syllabus implemented in the F-16. The requirement for D-model (two seat) rides adds unnecessary strain to the scheduling/training process. We should teach single seat mentality from Day 1."

The RAAF also seemed to follow a similar pattern of consistent policy. However, the interviewees alluded to the fact that the shift to deployment operations and a similar fighter pilot shortage in Australia has provided a catalyst for larger changes to the RAAF F-18 training. Additionally, the transition to the F-35, which will replace the Classic F-18 over the next decade, is another example of significant event drastically changing the training policy.

> As an example, one F-18 pilot stated:
>
> I believe the shift in philosophy towards a 'mentoring/teaching culture' has improved all aspects of training and output." Another pilot added, "I believe the largest area of policy which needs to be addressed is the 'how' of the training

system. Currently there is a one-size fits all approach to how things are taught and how people learn. I believe this needs to change to a more flexible/individual approach to teaching and learning.

A third F-18 pilot offered, “During the last five years I’ve seen a trend from traditional fighter pilot training move toward performance enhancing coaching. I.e. a move away from schooling in the form of pass/fail criteria towards ‘take as many goes as you need’ attitude.” The RAAF transition to the F-35, which will replace the Classic F-18 over the next decade, is another example of a significant event drastically changing the training policy. However, this study remained focused on the F-18 and F-16 policy only.

Differences. The USAF and RAAF differences are primarily a result of resource availability and cultural differences. The most notable differences between the F-18 and F-16 training program, from an administrative policy perspective, are the more highly regulated control maintained by the USAF Air Education and Training Command which is the higher headquarters command element for the USAF F-16 training program. In contrast, the RAAF delegates most of the training decisions to the squadron level which allows for a more flexible training program that can be adjusted within the 6 month period of a class. The USAF in contrast requires a lengthy waiver process for syllabus deviations and other administrative changes. Part of this is for good reason to standardize training across multiple different F-16 initial training bases. However, it is evident in reviewing the USAF and RAAF syllabus that the RAAF delegates the responsibility for training decisions to a much lower level. The current USAF syllabus control authority is a point of concern for F-16 instructor pilots. One instructor pilot stated the need to,

"Decentralize syllabus execution! Allow flight and squadron commanders to tailor syllabus to individual students (i.e. more rides when needed, or less when proficiency dictates)." Additionally, the USAF goes into much greater detail concerning requirements for failing a student, commander monitoring programs, and training documentation.

Many of the differences are a result of USAF and RAAF culture. The policy documents did not highlight this difference; however, the interviews showed that the RAAF pilots universally believed that previous RAAF training programs were designed to maintain an extremely high standard and were willing to fail a larger percentages of student pilots in order to quality control the pilots that graduated the program. As a result, the pilots believed the training was focused on assessment, testing, and stress management more than with the current USAF model that was more focused on instruction, coaching, and student management to graduate a higher percentage of students that started the course. Additionally, it was noted that the RAAF is a smaller organization than the USAF and therefore, pilot reputation and potential for future success was more closely scrutinized than in the USAF. The USAF seems to have placed a higher priority on fighter pilot production over quality control of the students that graduate. Or at least the USAF has made the decision to discriminate more thoroughly amongst pilot ability during follow on training such as flight lead upgrade and instructor training syllabus. The result is the RAAF produces a higher quality wingman at graduation but at a higher relative cost considering the number of pilots that complete a large portion of the training and then fail the course. It is important to note that the

interview data indicates that the RAAF is currently changing it's training policies; however, I could not examine any recent changes since departing Australia in 2016.

Another difference that seemed to be based on both cultural and resource availability was the RAAF higher use of dual aircraft with a back-seat instructor than the USAF. Advantages to the dual option were that it required less total sorties per student to complete the course because less direct support sorties were required. This was because many sorties could be combined with two students as opposed to having a student in one aircraft and an instructor in the other. Culturally, the RAAF preferred a more concentrated and stress inducing program to not just test the student's skill but also his (to date there are no RAAF female fighter pilots) ability to mentally handle the future stresses that fighter pilots are expected to endure. Having an instructor in the backseat provides a safety measure to further push the students through more aggressive scenarios and challenging situations with the benefit of a safety monitor in the back seat.

Disadvantages of the two-seat model are that the instructor cadre spends more flights in the back seat, which requires two instructors for one student on many of the two seat rides. It also delays the single seat fighter pilot mentality initially because there is a more experienced pilot in the back seat for many of the student's initial rides.

The simulator technology, and therefore the resulting training policy, also differs between each of the programs. The USAF has a Unit Training Device (UTD), Weapons System Trainer (WST) and Network Training Center (NTC) simulators. Each simulator has its unique and different capabilities. The RAAF does not have the same simulator capabilities. Although the types of events completed in the simulators are similar the

USAF availability for students to use the simulator for kinesthetic learning practice is more enhanced. The USAF syllabus is less compressed, as well, which provides students more opportunity to practice procedures, weapons events, and emergency procedures in a more detailed and representative environment.

Best Practices. The pilot's interview responses show the importance of inducing an adequate level of stress to bring each student to the optimum performance curve. It appears that the RAAF program currently reaches a higher stress level as indicated by a higher failure rate than the USAF. The students that do make it through the training have shown not only a high level of flying performance but also pride and confidence at being one of the few that could handle the demands of the program. The USAF attempts to do its pilot screening earlier in the pilot training pipeline and as a result some of the high stress techniques of the RAAF course such as information over load, higher demands for rote memorization, more focused evaluation rather than instruction and time compression are used less frequently in the USAF program. As a result, the USAF tends to have a less uniform product following the training. For example, those that thrive in the less stressful environment are free to perform at a higher level while some do not reach their full potential because they were not pushed to find their limits.

Optimum Instructor Approaches. Interviews showed IP servant leadership was the preferred and most effective leadership style. Additionally, students demanded very high standards from IPs just as IPs held high standards for students. A USAF F-15E pilot explained, "Probably the most important thing is a student-centered servant attitude of the instructor. A commitment to helping the student learn vs. the adversarial 'I'm going to

make this hard because it's supposed to be' attitude." The majority of pilots prefer the written instruction followed by chair flying as a form of kinesthetic learning. However, the lecture format in the USAF training is used much more extensively than in the RAAF program. Older pilots preferred inflight correction as opposed to waiting until the debriefing session to offer instructional techniques. However, younger pilots, closer to the initial training, seemed to prefer post flight instruction. This is likely because younger students are still in a completely overloaded state with the basic tasks of flying the aircraft and inflight instruction compounds the overload. However, older pilots have more ingrained habit patterns and experience with flight challenges and prefer the inflight correction to instantaneously address issues rather than waiting until the debrief. There was no consistent preferred learning style and most students required a comprehensive learning strategy that played to various training techniques. Most respondents did not think the simulator was sufficient to reduce flight training, as it did not replicate the stresses of flight.

The USAF went into further depth during academic portions of the course. This appeared to have both benefits and consequences. The RAAF program focuses on less depth but ensures the academic material is delivered much closer to the phase of training. USAF students provided feedback that academics are introduced too far in advance of the actual flight training. The USAF as part of the PFT process does not allow enough time to compress academics closer to the flying training. As a fighter pilot culture, the RAAF is more oriented towards a phased based training approach, which is evident in both their initial training and follow on operational training. The USAF tends to dilute its training

by introducing many different subjects at the same time in an attempt to pre-load the academic material so that that students are opted for more events in the training syllabus. The primary reason being it is a much larger organization and struggles to manage the larger number of students within the training window so the timeline between academics, simulators, and flights tends to diverge throughout the course. Many F-16 students explain that they have forgotten what they were exposed to in academics and have to review the material again prior to the flight. One F-16 student pilot stated, "The perfect balance would be academics within 2 days of the Sim where the knowledge is practiced and that Sim within 2 days of the flight where both the knowledge and practice can be applied."

Findings of sub-questions:

How influential are current RAAF and USAF policy practices in shaping the development of future policy? Previous policy influencing future policy was evident throughout the policy documents and the perspective provided by the pilots. For example, changes in mission requirements were often met with resistance. The two-year cycle for USAF syllabus review did not appear to generate large changes unless there was a PET event to inspire the change. For example, an F-16 structural problem for two-seat aircraft and then a developing fighter pilot shortage forced the USAF to reduce rides and compress the timeline to meet the demands. It also required a rewrite to the training program mid-cycle.

Due to a lack of access to RAAF trend data across multiple syllabi changes it was difficult to assess the PFT and PET concepts as derived from the USAF documents.

However, the RAAF pilot interviews indicated that the RAAF policy tended to stagnate at times but events such as recent combat deployments and the growth of the RAAF F-35 program has noticeably changed training priorities within the RAAF.

What training techniques are perceived to be most effective and efficient to train new fighter pilots as fighter aircraft technology and training systems advance? The USAF and RAAF conduct a phase-based training approach throughout the training programs. This is a phased process of academics, introductory simulators, skill based simulators, introductory flights and then demonstrating proficiency in the air. The pilot interviews showed a preference for chair flying and visualization as most important for superior performance in the air. The academic knowledge needs to be translated to practical skills and the kinesthetic processes of "chair flying" led to better results in the air. Visualization is important but realistic training devices are helpful in preparing students to handle airborne challenges. However, there is majority agreement that the simulator does not substitute for time in the air but supplements it as a means to prepare for flight.

What impact will new technologies such as aircraft upgrades, simulator capability, and new aircraft have in shaping future policy? The F-35 program is the most current example of new technology shaping future policy. However, the pilot interviews illustrate how there is policy carryover from previous fighter training programs as different fighter pilot communities populate the new program. The F-35 community is currently trying to adapt policy developed within many different fighter communities, which presents a challenge because each communities' policies and culture

are different. Meanwhile the F-35 technology is very different from legacy airframes, which is creating different policy requirements that have not been addressed before.

Despite the policy and cultural differences, a recurring theme during the pilot interviews was that the simulator capabilities across all airframes were helpful for skill work and repetition of part task trainers, emergency and instrument training, and some larger scenario development training. However, the simulator does not adequately represent the stresses of flight. For example, the lack of G forces and other physiological issues as well the lack of concern for personal well being while in the simulator were important in understanding why pilots did not feel the simulator could reduce the need for flight hours. From a policy perspective as the F-16 and F-18 age they will become more and more expensive to operate and the F-35 already has a high operational cost. Therefore, policy makers will continue to have to balance the need to supplement flying training with simulator capabilities.

Supporting Data

Coding Data

Table 1

USAF and RAAF Coding Summary

Coding Summary								
	Fighter Pilot Culture	Learning Style Theory	Auditory	Kinesthetic	Visual	Written	PET	PFT
1. Combined Wingman Syllabus (Sep 2015)	20	0	161	190	2	4	5	69
1.1 F-18 Conversion	0	0	18	28	1	0	0	0
2. F-18 Air to Air	0	0	33	36	1	0	0	0
2.1 F-18 Air to Air	0	0	2	15	0	0	0	0
3. F-18 Air to Surface	0	0	38	34	1	0	0	0
3.1 F-18 Air to Surface	0	0	3	6	0	0	0	0
4.1 F-18 Pilot 1	14	6	0	2	1	1	2	6
4.2 F-18 Pilot 2	9	0	0	1	0	0	0	4
5.1 F-16 Pilot 1	7	0	0	1	0	1	2	7
5.2 F-16 Pilot 2	5	1	1	0	0	1	1	5
5.3 F-16 Pilot 3	5	2	0	1	0	1	0	4
6.1 F-18 IP 1	9	0	0	1	0	0	0	1
6.2 F-18/35 IP 1	6	3	0	0	0	1	2	5
6.3 F-18/35 IP 2	9	0	0	1	1	0	5	8
7.1 F-16 IP 1	11	0	0	0	0	1	6	7
7.2 F-16 IP 2	3	0	0	2	0	0	0	6
7.4 F-16/35 IP 3	9	0	0	0	0	0	3	4
8.1 USAF Exchange Pilot	4	1	2	3	2	2	1	7

Table 1 shows all coding data collected from the study. The F-18 Conversion, both F-18 Air-to-Air, and F-18 Air-to-Surface documents are all taken from the RAAF F-18 syllabus. The data is combined in the chart below. The RAAF Syllabus is separated because the RAAF only released specific sections for use in this study. This also explains why there are no codes assigned for PET and PFT within the RAAF syllabus despite there being a total of 5 PET and 69 PFT codes within the USAF Combined Wingman Syllabus dated September 2015. It appeared that the punctuated events occurred at a rate similar to the USAF. The higher rate of PET coding during the interview process is likely due to the fact that the interviewees are asked specific questions concerning the change they have seen and would like to see in future fighter pilot training policy. Therefore, it

seems reasonable that there would be a higher rate of PET discussions because they are often generated by more drastic changes then are typically seen during a steady PFT process.

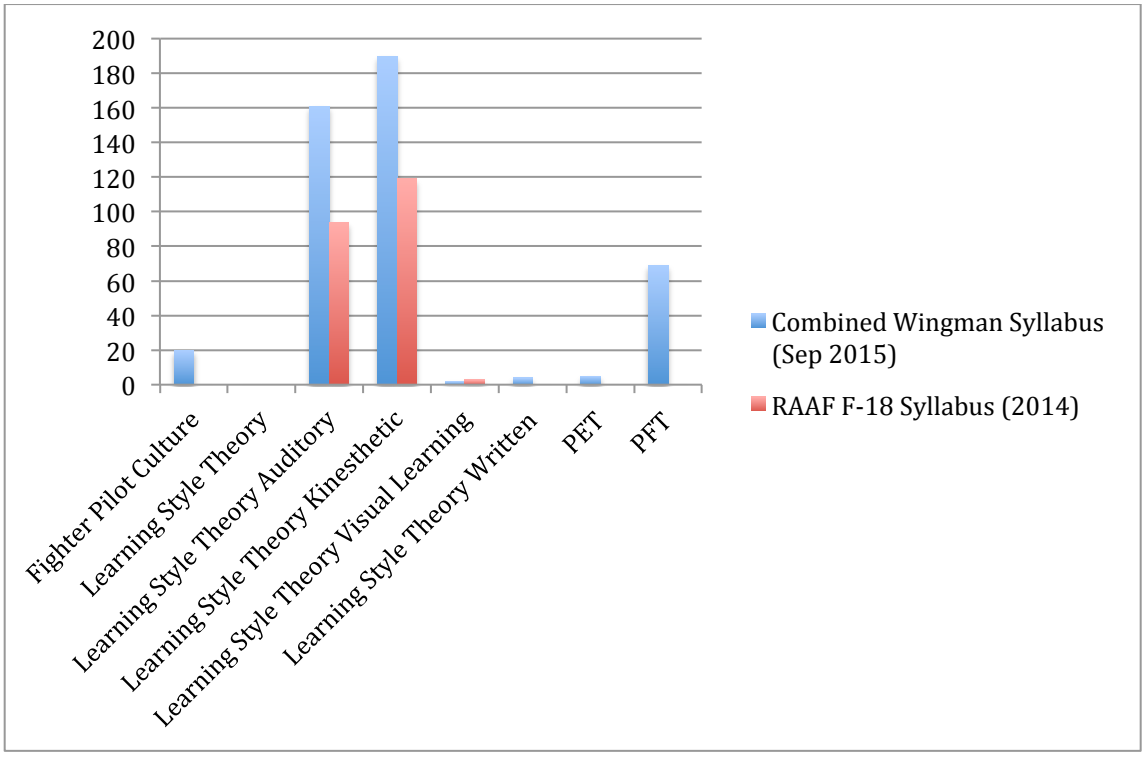

Figure 1. USAF and RAAF policy document coding summary.

Figure 1 graphically shows there are 161 auditory codes in the USAF syllabus and only 94 in the RAAF syllabus which shows a 58% difference and highlights the RAAF places less emphasis on the lecture and places more responsibility on the student for self-study to maintain the pace of the program. It is important to note the volume of information required for students to absorb is similar between each program. Both programs place a much higher emphasis on the kinesthetic learning style and at approximately the same rate of effort. This makes sense because the USAF and RAAF

are conducting flying training courses which is mostly composed of training device, simulator, and flight training which are all coded as kinesthetic events.

Another interesting theme is illustrated in Figure 1: the much higher rate of auditory learning styles seen in the CWS and RAAF syllabus. The pilot preferred learning styles were more uniform with a slightly higher preference for kinesthetic learning practices over the others. It is important to note that during the coding process all lectures in the respective syllabi were coded as auditory. Although in practice there is a mix of auditory and visual learning as well as occasional kinesthetic and written techniques used within certain lectures. However, it does appear, especially in the USAF F-16 syllabus, that there is a large preference for lecture presentation instead of other types of learning delivery methods. These concepts will be visited again when moving from the subjective coding data and comparing with the objective syllabus data depicted in coming sections.

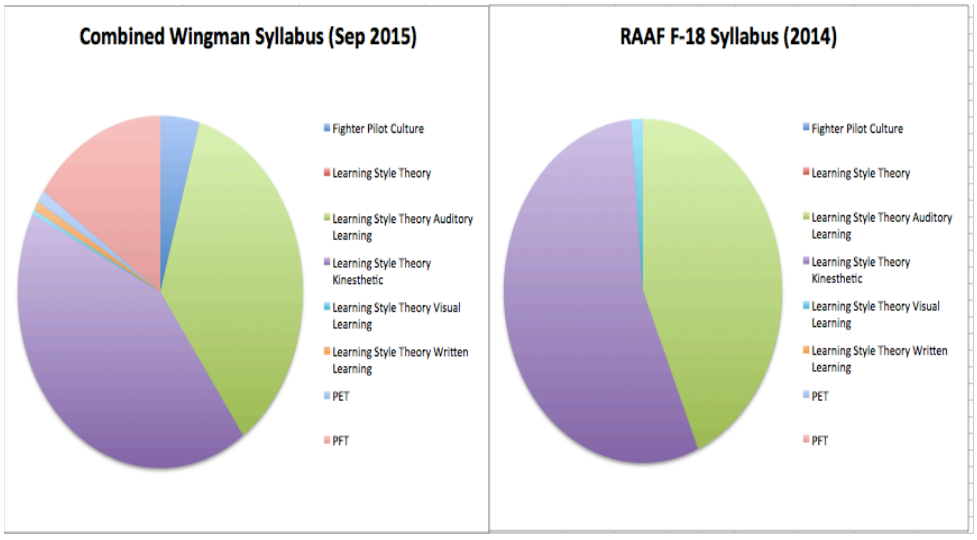

Figure 2. Coding percentage differences within the USAF and RAAF syllabi.

Figure 2 shows the coding percentage difference within each respective syllabus. Additionally, the USAF syllabus is designed to synchronize all USAF F-16 training bases across Air Education and Training Command whereas the RAAF only needs to standardize one squadron. As a result, the USAF syllabus is much more policy oriented and influenced by policy feedback, and goes into greater depth concerning administrative procedures. Also, the RAAF is a smaller organization and has a more compressed course timeline, which shows an increased focus on the kinesthetic elements of simulators and flying and less effort on academic depth.

There was little coding of fighter pilot culture from the syllabus documents. This seems logical because the intent of the syllabus is to objectively define the policy and remove much of the subjective cultural aspects that are influential during the fighter pilot interviews.

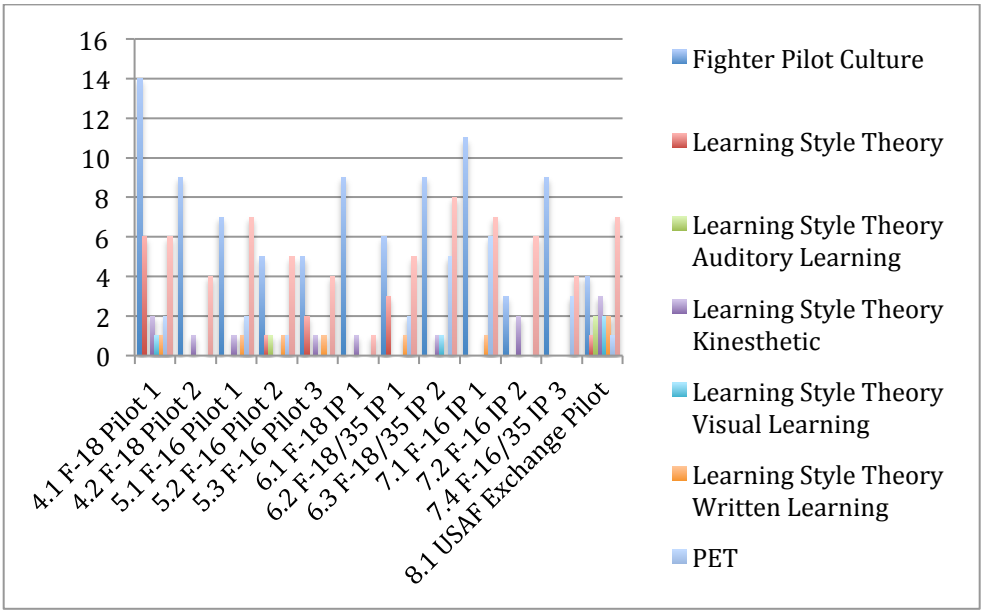

Figure 3. USAF and RAAF interview coding.

Figure 3 shows how influential fighter pilot culture is within the fighter pilot community. Across the RAAF and USAF interview sample all pilots except for F-16 Pilot 1 and F-16 IP 2 and the USAF exchange pilot discussed fighter pilot culture and more specifically the importance of fighter pilot culture more than any other topic. A common theme was that the consistent, and at times oppressive, focus within both air forces on political correctness was hurting the tactical capability of its pilots.

One pilot explained:

> I feel there is too much emphasis put on promotion and secondary duties, which have no real bearing on being a 'fighter pilot.' For example, I don't really see people being evaluated on how good they are in the jet but more on what Open Day/ Dinner/ Meeting they helped plan. One student on B-course is currently also enrolled in a master's degree to help him for later promotion. To me he should be using study time to further his tactical knowledge.

The challenges, dangers, and mindset needed to fly single seat fighter aircraft requires pilots that are not risk averse and brutally honest with each other during training. In addition to the auditory, visual, written, and kinesthetic codes, general learning style code was included to capture the instances when pilots specifically acknowledged the importance of understanding and fusing different types of learning techniques but did not specify which one.

The RAAF pilots consistently acknowledged a transition within the RAAF from a training policy that focused in part on evaluating and testing pilots and pushing pilots to their maximum capability. If that maximum capability did not meet the minimum

standard then there were no concerns with failing the student from the course. As the demands for fighter pilots in the RAAF has increased there is a concern that in an attempt to change the course to more of a coaching and instructing focus, coupled with a willingness to provide additional resources to prevent a student from failing from the course, will ultimately produce less capable pilots.

The USAF pilots seemed to acknowledge that the USAF had made the transition to more of an instruction course and has developed a much more stringent Commander Awareness Program (CAP) to monitor and develop the students that were struggling. The results were a smaller percentage of students failed from the USAF course. The goal being that the pilot screening had already occurred during earlier phases of the pilot training pipeline and that the students that had been accepted into the F-16 community had already passed the screening bar. Failing an F-16 student would be a large waste of resources considering the time and money already invested to get he or she into the course.

Another theme from the interview coding process showed that pilots preferred a variety of methods of auditory, visual, and written learning styles. However, there was a trend that kinesthetic styles were the most important. That ranged from “chair flying” or sitting on the ground and visualizing or rehearsing practice tasks that they would be required to perform in the air as critical to success. However, there was also a theme that simulator training was in no means adequate to reduce flight time even in aircraft as advanced as the F-35, let alone the F-16 or F-18. Pilots acknowledged the importance of simulators as essentially an advanced form of practice and visualization that can be

applied in the air. However, none of the kinesthetic techniques used on the ground could replicate the stress in flight. Much of that stress comes from gravitational forces, sounds, smells, and inability to replicate the numerous technological, weather, air traffic control, physiological variables that routinely go wrong while in flight. With the understanding that the ground portion for kinesthetic training cannot replicate flight it was consistently identified as an extremely worthwhile tool in preparing for flight. Flying is focused primarily on a practical application of an endless supply of required academic information. The simulator helps increase the retention of academic concepts through applying kinesthetic techniques to reinforce the skills and concepts introduced in the classroom. Although a simulator cannot replicate flight it can teach pilots many valuable lessons that can then be applied or avoided inflight.

Policy Comparison Data

The following section presents the comparative differences between the USAF and RAAF training syllabi. Due to the fact this is an unclassified study and the documents used in this study are For Official Use Only (FOUO) the numerical values are removed from the charts in order to remain with the spirit of the agreement with the RAAF and USAF concerning releasing syllabi data to the public. However, the trend data shows the differences in focus within each program, which is the most important aspect of the policy review.

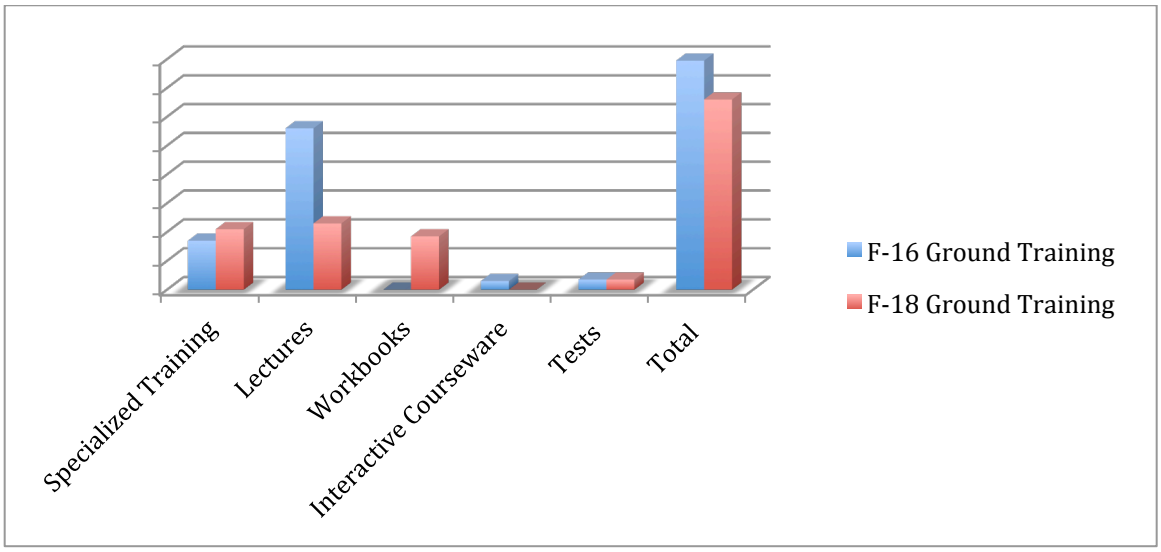

Figure 4. USAF and RAAF ground training. Numbers hidden for security.

Figure 4 shows the differences in weight of effort as defined by the number of syllabus events for each category of ground training events. For example, lectures are more prevalent in the USAF than the RAAF program. However, the RAAF uses an electronic workbook for the individual to replace much of the classroom time. The RAAF program remains more grounded in the practical portions of flying whereas the USAF tended to dive deeper into theoretical and back ground topics in the hope of giving a greater overall perspective. The consequence of the increased depth is additional time in training for the student, which is not an option in the RAAF because they must remain on the six-month course timeline.

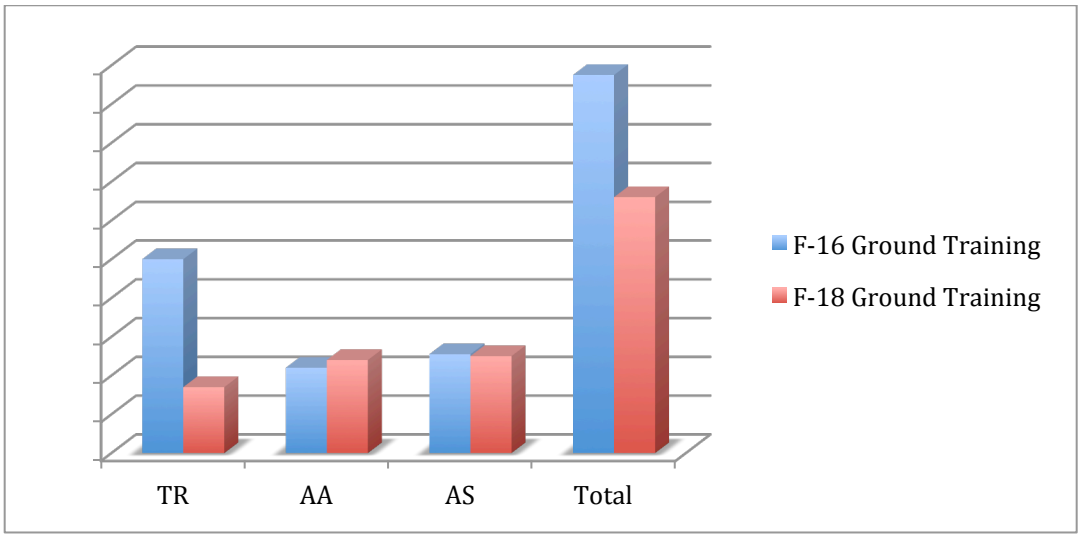

Figure 5. USAF and RAAF ground training by phase. Numbers hidden for security.

Figure 5 highlights the differences in weight of effort as defined by number of events of ground training by each phase. TR is the transition phase, AA is the air-to-air phase, and AS is the air to surface phase. The reader can see the more in-depth focus on systems and overview information in the USAF TR phase. However, the weight of effort between the two programs is very similar throughout the course.

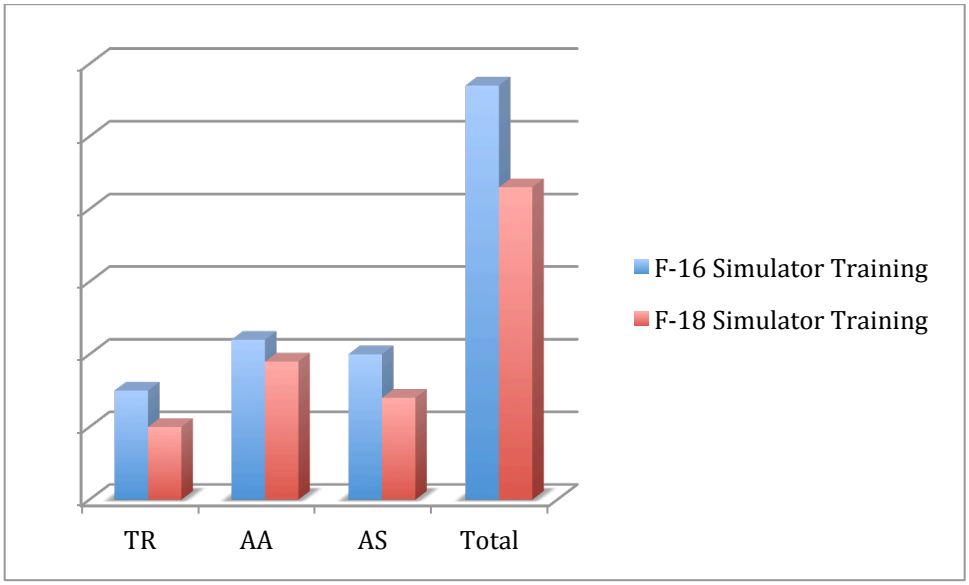

Figure 6. USAF and RAAF simulator training by phase. Numbers hidden for security.

Figure 6 highlights the resource differences between the USAF and RAAF. Within the simulator devices the USAF has many device resources they leverage across the course. The logic is that it is cheaper to put the student through multiple ground-based simulations to learn the basics that can then be reinforced in the air when the cost per hour exponentially increases. The transition phase focuses on takeoff, landing, instruments, emergency procedures and aircraft handling.

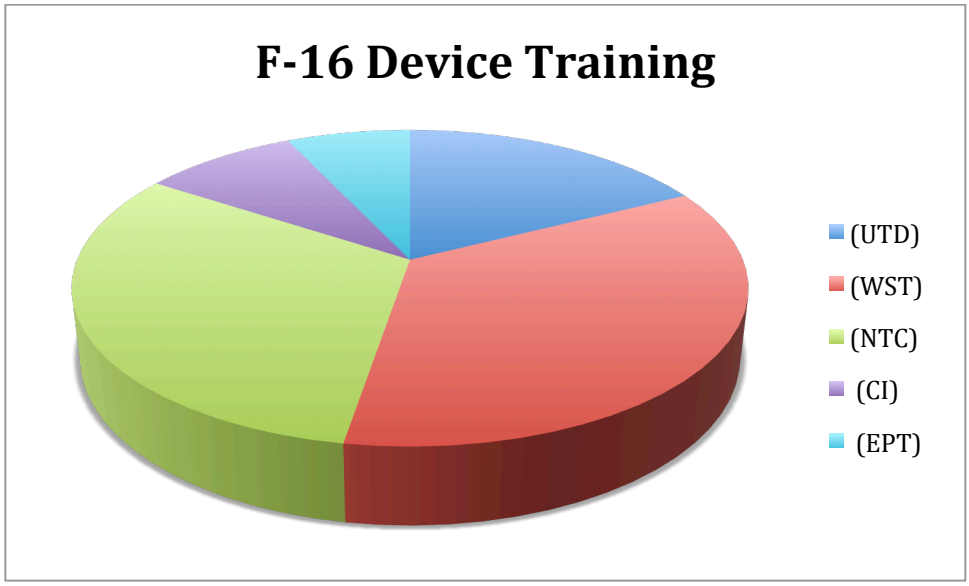

Figure 7. USAF F-16 device training (numbers hidden for security)

Figure 7 shows the composition of different training devices and simulators used in the USAF. Each device is different from simple emergency procedures trainers (EPT) all the way to a Network Training Center (NTC), which includes full aircraft replication with 360 high-resolution visual graphics. In contrast, the RAAF F-18 program only has one type of simulator, which limits the types of events that can be practiced/replicated in the simulator. Much of the simulator work is front loaded in the course and is focused on

emergencies and instrument training. This explains why the USAF places a higher emphasis on simulator training in the beginning of the course.

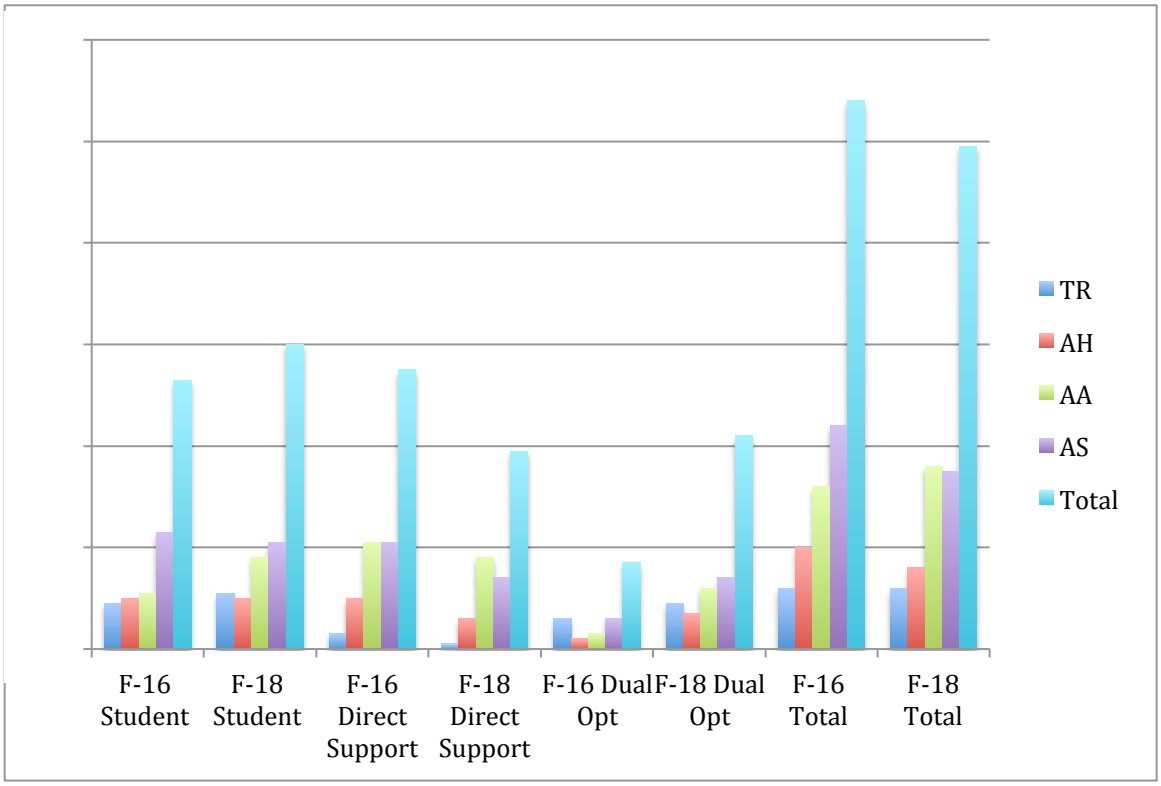

Figure 8. USAF and RAAF sortie allocation by phase (numbers hidden for security)

Figure 8 shows several important trends to consider when examining policy differences between the programs. First, the F-18 student's complete 12% more flights than the F-16 students. However, when combining the total number of sorties required to train a new pilot the USAF uses 8% more rides than the RAAF. This is because the RAAF completes more dual flights than the USAF and more dual flights in which there is a student and instructor in the front of one aircraft flying with another student and instructor in a separate aircraft. Meanwhile many of the USAF sorties that have solo students require more direct support aircraft to complete the same number of training

rides for the students. This allows the RAAF students to complete more student sorties at a reduced total number of sorties compared to the USAF. However, more dual sorties also mean that more instructors must be available because on most dual sorties there is an instructor in the dual aircraft and also in the direct support sorties that are needed to accomplish the training tasks.

Summary

Summary of Findings of the Primary Research Question

The USAF and RAAF training programs are each six-month programs with a similar composition and delivery style. The policy feedback process appeared to be influential in explaining why and how the policy documents evolved over time. However, the information derived from the coding construct showed that punctuated events also influenced the training policy process. For example, the USAF experienced unplanned maintenance and pilot shortages inside the normal planning timeline that generated significant change. The USAF showed only a 7% coding rate of PET within the policy document. However, the time period examined in this study as well as the responses to the fighter pilot interviews highlighted examples of punctuated events greatly influencing the policy process.

The primary differences between the USAF and RAAF programs were the result of contrasting resource availabilities and cultural differences. The fact that the USAF is trying to maintain standardization across a much larger bureaucratic organization revealed that although the USAF has access to greater resources that there are training efficiencies that could be better leveraged that will be discussed in Chapter 5.

The cultural differences between the USAF and RAAF were most evident when comparing the responses to the interview questions. The most noticeable differences in policy outcomes were how each air force viewed initial fighter pilot training as either an instructional course or as an evaluation of student potential for future training challenges. However, this discussion cannot be used to stereotype the USAF and RAAF on different sides of this issue. There is disagreement across the entire community of how best to design training policy and the USAF and RAAF have recently become more aligned with the introduction of Joint F-35 because the USAF and RAAF are training in the same squadron. It will be interesting to see which direction each Air Force follows in the future and there was not enough data available in this study to predict how the F-35 program will evolve. Although the USAF F-16 will be in service until 2048 the RAAF Classic F-18 community will likely see an even greater pace of change since the RAAF is retiring the Classic F-18 and intends to transition to the F-35. The F-35 has more advanced technologies and is a single seat only aircraft. Losing the two-seat training capability will likely have future training ramifications that will be discussed in Chapter 5.

Another finding was a better understanding of the fighter pilot's perspective on the importance of simulator technology. It did not appear that the USAF improved simulator capabilities significantly improved quality of product at the end of the program because the RAAF found other ways to compensate in their program. Once example was the RAAF flew 12% more flying sorties than the USAF.

Best practices identified throughout the training included well-designed stress application to the students coupled with servant instructors, and a timely introduction of

academic, simulator, and flight training. Much of the discussion in Chapter 5 will discuss recommendations for the USAF to continue to evolve to find an optimum balance of stress management, instructor involvement, and timely introduction of training events in the best sequence to maximize student learning and performance.

Summary of Findings of sub-questions

Both previous policy and unexpected punctuated environmental changes influenced policy outcomes throughout the policy documents and the perspective provided by the pilots. The phased based building block training plans followed a consistent process of academic, simulator, and flight training within the TR, AA, and AS phase. This training plan used in the USAF and RAAF appeared to be effective in developing new fighter pilots. Further discussion in Chapter 5 will offer different types of training styles future policy makers may want to consider. However, there was no information that indicated the current Western training style was not effective.

In addition to the training and policy development process the technological evolution of aircraft and simulator technology does impact future training. There was a consistent theme from pilots concerning a need to protect flying training resources because simulator training does not adequately substitute for the real thing. However, there does appear to be data that shows that improving kinesthetic training tools does help pilots perform better in the air. Further discussion in Chapter 5 is needed to explore additional ideas to supplement flight training because the number of flight hours available to pilots in the future will likely remain a limited resource.

Conclusion

This chapter presented the research findings as they related to the research questions. Chapter 5 will further develop the interpretation of those findings and explain the significant limitations placed on this study. Additionally, I will provide several fighter training policy recommendations for USAF policy authors to consider when developing future training programs. The goal is to not only provide information to improve future training programs but also highlight the importance of remaining a good steward of public resources when developing future training policies.

Chapter 5: Discussion

Introduction

In this qualitative multi-case study, I compared USAF F-16 and RAAF F-18 fighter training policies to better understand the training policy process. A major goal was to provide U.S. policy makers new insights to capitalize on best practices, which could result in more efficient use of resources to train new fighter pilots. The USAF and RAAF are currently involved in the transition from fourth generation fighters such as the F-16 and F-18 to the fifth generation F-35 JSF. However, the USAF and RAAF intend to integrate fourth generation aircraft with the JSF for decades to come (Clashman, 2017). The U.S. partnership with Australia will continue as the United States and many of its allies transition to the JSF (USAF, 2015). In this chapter, I summarize and explain the key findings from the study, discuss policy recommendations and recommendations for future research, and reiterate the study's importance for social change.

Interpretation of the Findings

Program Similarity

The USAF and RAAF training programs are each approximately 6-month programs with a similar composition and delivery style. Each course follows a similar structure, which includes academics, simulators, and flights in a linear sequence of transition, air-to-air, and air-to-surface phases.

Program Differences

The cultural differences and the resource disparity between the USAF and the RAAF were the most striking differences. The USAF's perceived challenge was how to

best manage a training syllabus that develops a standardized product across many different squadrons. The USAF's advantage was the fact that there was a large organization and more academic, simulator, and training airspace resources at the policy maker's disposal to develop new training policy. However, in an attempt to standardize the training process, the individual squadrons lacked the ability to tailor training to meet student's individual needs in comparison to the RAAF program. The RAAF training course comprised one squadron and a smaller cadre of IPs, which allowed the RAAF to make internal changes quickly without needing to gain approval from higher headquarters. Many of the USAF and RAAF differences may be a result of the relative scales of the USAF and RAAF. There also appears to be many cultural differences that influenced training policy.

Culture

The most noticeable cultural difference between the USAF and RAAF programs was a difference in instructor pilots' instructing styles. The USAF program was developed as an instructional course with most of the pilot aptitude screening occurring in early stages of training. The Australians appeared to have designed their course not only as a means to develop new fighter pilots but also to screen pilots who did not have the necessary skills and attitude to succeed as an Australian fighter pilot. Therefore, the RAAF was willing to collectively push students to a higher stress level as a means to test them. As a result, a higher percentage of students failed the course, which was viewed as an acceptable consequence to ensure the very high standards of the students who did complete the course. Several of the highly experienced and most influential RAAF

instructor pilots expressed that they felt the end result of a more intense training program was a more highly qualified and proficient wingman.

Another aspect of the RAAF culture that seemed real but difficult to explore during the data collection was something the Australian's referred to as the "tall poppy syndrome." This meant that the RAAF pilots were very sensitive to any pilots who seemed to be rising too far above the rest of the crowd, and collectively the RAAF pilots would "cut down" a pilot who tried to show up or rise too far above his peers. Although this phenomenon is common throughout fighter squadrons, it seems USAF fighter squadrons tend to more openly celebrate individual achievements than do RAAF squadrons. This observation says nothing to the competitive nature, work ethic, or standard of excellence that exemplifies the RAAF fighter squadrons, but does highlight that although outstanding performance is expected, it should not be done too loudly or to one-up peers in the squadron.

The differing philosophy may be partly attributed to the fact that the F-16 community is much larger than the RAAF F-18 community. As a result, there is larger variation in pilot proficiency within the community. This is important because in an attempt to standardize the training, much of the ability of the USAF squadrons to tailor training was limited because of the bureaucratic nature of the syllabus and many of the administrative requirements. The RAAF program, in contrast, is carried out in one squadron, and all of the pilots know each other. This allows for more personalized decision-making when evaluating the potential of individual students.

As a result of this difference in culture, there was an additional, noticeable difference between the two training programs. My syllabi review showed that the RAAF students completed 2.5 times as many dual sorties as the USAF students. The RAAF and USAF have approximately the same percentage of two seat aircraft in training squadrons; however, the RAAF elected to fly more of the sorties with a student in the front and an instructor in the back seat than did the USAF. RAAF culture seemed to be the most likely reason for the difference. First, the RAAF faced more significant fiscal, resource, and time constraints to complete the training in a defined six-month period. With only one squadron teaching the RAAF Classic F-18 training at a time, any delay in the program would significantly ripple through the remaining squadrons. Therefore, more events were compressed into a student's schedule in a day, and a student needed to prepare a larger volume of material for the following day's events to stay ahead of the curve. This heightened paced added considerable stress to the students and, coupled with demanding training scenarios, often pushed many of the students beyond their current limits. The problem with pushing pilots beyond their limits is that results can often be unsafe. The two-seat aircraft provided a safety monitor/instructor to help correct errors and prevent dangerous situations from developing.

In contrast, the USAF tended to reduce the intensity of many of the training events to allow the students to fly solo. The students are not exposed to some of the more demanding situations as the RAAF pilots as early in the training; however, there is a benefit of increasing the student's solo time because it is critical to developing a single seat fighter pilot.

Collectively, the fighter pilot community has wrestled with the need for fighter pilot production balanced with the need for quality control of the product produced. In the midst of the continuous war on terror since 2001, it appears there is a similar transition to a less proficient force in the USAF for many different reasons. Some examples cited by pilots in this study included leadership failing to make tactical flying excellence a priority, a risk adverse politically correct culture, a lack of training resources, burn out, and an improving airline industry that is luring the most experienced pilots from the USAF. Meanwhile, the USAF has renewed its commitment to maintain a certain number of fighter pilots, but the rate at which the USAF is trying to accomplish this goal risks sacrificing quality in order to meet quantity numbers. A second order effect is even if the USAF can produce more pilots, it does not necessarily mean it can absorb all of those pilots effectively in front line units. As a result, the pilot production problem leaves policy makers with a difficult decision to reduce training standards in order to ensure the required level of production.

There is disagreement across the entire community of how best to design training policy; however, it does appear that there are few short cuts when it comes to developing new and proficient fighter pilots. There are opportunities to improve technological training capabilities; however, as noted by the pilots I interviewed, there are few substitutes for actual flying time. Flight time is critical for placing new pilots in demanding situations to develop the skills and air sense needed to succeed as a fighter pilot.

The RAAF will lose the two-seat capability as it retires its Classic F-18 fleet and transitions to the JSF. It remains to be seen if the RAAF will elect to reduce training standards in order to accommodate a training program that remains safe for solo study pilots. Or if the RAAF will increase its screening demands to ensure that students selected for the program have proven to have the capacity to fly single seat fighters in highly demanding situations before ever being selected to fly the F-35.

The USAF F-16 policy makers face a different challenge in that the F-16 program is expected to continue until 2048 (Clashman, 2017), which will necessitate redefining the F-16s role in 21st century warfare as a compliment to the more capable fifth generation aircraft. Policy makers will need to make similar decisions whether to increase pilot standards, leverage two seat capabilities, or transition away from two seat options and use the simulator to introduce more of the most challenging scenarios. The USAF and RAAF have recently become more aligned with the introduction of the F-35 because the USAF and RAAF are training in the same squadron. It will be interesting to see which path each air force follows. There was not enough data available in this study to predict how the F-35 program will evolve in the future.

Technology

The USAF and RAAF pilots believed that simulator training did not adequately replace actual fight training. However, both the USAF and RAAF relied heavily on the use of simulators throughout the training program. In 2015, it cost approximately $20,000 per flight hour to fly the F-16, which is more expensive than both high- and low-end

training simulators. Therefore, it will remain important for the USAF to use the simulators for both cost effectiveness and as a safe way to introduce pilots to new tasks.

During the interview coding process, it also became evident that students relied heavily on kinesthetic techniques to prepare for flight tasks. The simulators seem to offer the best option for flight prep because it allows students to go through a hands-on process to develop habit patterns and procedures through repetition and trial and error that would not be possible in the actual aircraft. Therefore, in addition to improving the actual flight simulators, policy makers should consider providing additional resources for more computer-based, low-cost simulators to use in the classroom and for self-study as a means to improve opportunities to help students prepare for the actual sorties. The traditional "chair flying" method included envisioning flight events and reviewing sequences as pilots expect them to occur in the air. The problem with this visualization is that a new pilot has not learned the pacing, sight pictures, and control application required to accomplish many required tasks. Therefore, continuing to develop and implement lower cost simulations to help students with accurate visualization and preparation could significantly help students prepare for flight training.

Another important component for improved simulator use is the fact that the simulator can be used to simulate scenarios that are not safe or that cannot be accomplished in the normal training environment. Fully developed emergency procedures, weapons employment, and threat simulation are often not available in the flight-training environment; however, the simulator provides an opportunity to test many of the more advanced concepts that are not available in a real environment. The important

theme associated with improved simulator training is to use it to supplement, but not replace flight training.

Evidence of PET and PET

The USAF and RAAF training programs are each six-month programs with a similar composition and delivery style. The policy feedback process appeared to be extremely influential in explaining why and how the policy documents evolved over time. When reviewing the pilot interview responses it was clear that many of the training events and techniques used during the training process were the result of previously proven effective techniques that pilots continue to use and refine today. The balance of academic, simulator, and flight training appeared to be consistent as a proven formula to develop a new fighter pilot within the six to nine month window. The governance stream of PFT appeared to play the most significant role in shaping syllabi revisions. The procedures in the previous syllabus were the starting point for the next syllabus and although the tactical training events often changed in the new syllabus, the program policies for how to execute the program changed very little. However, in the USAF F-16 program the exception to policy (EPT) training syllabus illustrated a punctuated event and a departure from the PFT theme. The USAF experienced a fighter pilot shortage crisis as more and more experienced fighter pilots left the service due to a combination of reasons such as new economic opportunities and burn out from the pace of the USAF lifestyle. As a result, there was a decision to shorten the length of the training program to include academic and flight hours to an unprecedented level within the F-16 program considering the volume of information required for today's fighter pilot. In parallel the

RAAF has also experienced significant changes as they joined the fight against ISIS in the Middle East in 2015 and are also enjoying a booming airline industry that is further taxing the available pool of experienced fighter pilots.

Although there did appear to be evidence of both PFT and PET events within the policy process it is important to note that these two processes do not explain all events within the policy process. The following section is used to introduce several additional policy theories to include ambiguity and multiple streams, advocacy framework, and narrative policy theory. There may be potential for future policy researchers to study fighter-training policy through a different theoretical construct.

Ambiguity and multiple streams. Ambiguity and multiple streams theory (AMS) is used to explain how an entire organization works in an ambiguous environment with multiple stakeholders, agendas, and variables that contribute to the policy process (Zahariadis, 2014). The theory is well documented and has the benefit of being a holistic approach to understanding the U.S. government policy process. However, the goal of the fighter pilot training comparison was to use a conceptual lens that allowed for the policy process to be broken down into comprehendible parts in order to make a valid comparison. The AMS approach could be a viable option for future research into USAF fighter pilot training policy; however, the author believed it was too complex for the scope of this study.

Advocacy framework theory (AFT). Advocacy framework theory proponents seek to use the policy system as the main unit of analysis to understand the policy process (Jenkins-Smith, Nohrstedt, Weible, & Sabatier, 2014). For example, a policy topic such

as training policy and the stakeholders that directly or indirectly impact how the policy develops are used as the basic level of analysis. The stakeholders are then organized into coalitions based on particular shared beliefs, desire, or motivation that interact with other competing and complementary coalitions. The resulting policies are the result of the translated beliefs between the individual coalitions (Smith et al., 2014). At a very basic level the interaction of pilots, engineers, command sections, contracting, and airfield support agencies will all fall into particular coalitions that shape the resulting training policy. However, the coalitions that would naturally develop in the USAF system would likely differ from the coalitions in the RAAF structure and would have created a confusing metric to conduct the comparison. This framework would likely work better in a case study of an individual training program.

Narrative policy framework (NPF). The narrative policy framework is interesting as it allows the researcher to explain how a policy maker's message impacts policy as much as the underlying dynamics that inform the policy. The NPF is a new policy framework and has the potential for new studies into the policy process (McBeth, Jones, & Shanahan, 2014). For example, the Chief of Staff of the USAF has recently highlighted the importance of the F-35 program to not only the DoD but to our many partner nations that have committed to purchasing the new aircraft (Maldonado, 2015). Despite the continuous problems that plague the F-35 program as documented by Maldonado (2015), it would be interesting to explore how the policy narratives from congressional and USAF leadership are impacting the resulting policy. However, the NPF does not provide the needed structure to compare the F-16 and F-18 training policies

in this study. NPF certainly has potential for future research to see how the leadership narrative impacts the evolution of new training policies.

Optimum Instructor Approaches

Servant leadership. Another major finding of the study was the importance of support to the student to maximize success. Although students must accept significant personal responsibility for their own training each of the pilots that responded to the interviews highlighted the importance of instructor skill to facilitate the student's learning. Servant leadership is a term used to describe leaders that put the needs of followers first above their own (Marquet, 2013). There appears to be a correlation with the importance of a similar mindset for instructor pilots as instructor pilots serve as both teachers and leaders for new pilots. The pilots believed that instructors that tailored instruction to the needs of the students were most effective in helping pilot's master new flying tasks. There may be parallels to this servant leadership concept that would help instructors learn to tailor instruction to a student's most effective learning style. This additional instructional flexibility would lead to policy changes to de-standardize portions of the training program to better meet the instructional needs of individual students. Although this concept may sound intuitive many of the policy decisions within the USAF syllabus actually inhibit this process because the syllabus and special instructions to accompany the syllabus are often overly prescriptive and limit the instructor's ability to tailor training to best meet the students' needs. There is good reason for this as the syllabus is designed to standardize training. However, a compromise may be needed. A potential solution would be to delegate the waiver authority for deviations to the syllabus

to the squadron commander, which is very similar to the RAAF process. The USAF waiver authority is currently held at the higher headquarters level, which makes adjusting training more difficult and administratively demanding. The added red tape often prevents an instructor from going through the effort to make adjustments for student's training.

Recognizing the strong desire for kinesthetic preparation. Another recurring theme was a strong desire from pilots to use kinesthetic preparation techniques to prepare for syllabus events. Computer based software to simulate avionics use in the airplane as well as to access individual flight trainers such as the UTD could significantly help students mentally prepare, visualize, and rehearse for approaching flights. Even if the preparation is not a perfect replication of the true challenges of the actual flight; using computer based aids to rehearse basic procedures can be valuable in helping a student understand the task load, cadence, and challenges of basic procedures in flight. This prior preparation can help students get better training from their time in the air because they are better prepared for procedural aspects of flight and can spend more cognitive effort in the air to learn the skills and judgment decisions that must occur during flight.

Best Practices

Best practices identified throughout the training included well-designed stress application upon students coupled with a timely introduction of academic, simulator, and flight training. Phase-based training still appears to be the most effective training technique for fighter pilot training; however, it is important to note it is not the only technique. The USAF should continue to evolve to find an optimum balance of stress

management, instructor involvement, and timely introduction of training events in the best sequence to maximize student learning and performance.

Stress management. The application of stress is a critical component of the fighter pilot training because pilots have to perform during life and death situations on a regular basis. Many flight tasks can be learned over time; however, the six-month training courses demand a steep learning curve in order to accomplish all of the training tasks in the allotted time frame. Students must adapt to new challenges and demands throughout the training program and if a student falls behind there often is not time for the student to recover. It is not enough to just learn the information or to accomplish the flight maneuvers. The training needs to ensure the students are forced to think and respond under pressure to prepare them for challenges of combat flying. Finding the correct balance is important as applying too much stress leads to a point of diminishing returns in which performance suffers. The RAAF compresses its training schedule to both finish the training quickly but also induces a significant level of stress simply through forcing time management challenges to complete the task load. There could be benefit from reducing the time in-between flights and actually reducing the number of hours of academic training but placing it closer to the flight training. This adjustment would force a sense of urgency and stress to demand the student's full concentration and focus to prepare for flights that are rapidly approaching.

Academic course timing. The F-16 student pilots believed better aligning academic material with the corresponding simulator and flight training could be very beneficial in improving their preparation for approaching flights. A major consequence of

an increased training pace is that if a student falls behind in the training it is difficult to catch up and the stress level can easily mount to a place where the student cannot effectively recover. The USAF might need to accept a higher failure rate to actually increase production by reducing the course timeline. This concept is applied in the RAAF and also at the USAF Weapons School. Currently the USAF introductory F-16 training has a much larger class size coupled with constraints on available flight hours. As a result, the new USAF F-16 pilots have more time between flights as well as more time from academic and simulator introduction until accomplishing the new event airborne.

Phase-based approach. The USAF and RAAF both follow a phased based building block training plan following a consistent process of academic, simulator, and flight training within the TR, AA, and AS phase. Although this training game plan has proven effective it is not the only type of training available. For instance, the Dutch have experimented with focusing on more mission-oriented training in their F-16 training program. This is a move towards mission-oriented training that is more dynamic and less structured than traditional training schemes (Van Der Pal et al., 2009). The intent is to work from a primary goal backwards with the intent to meet a certain mission objective. Instead of using incremental building blocks to arrive at the goal the training program uses realistic scenarios to expose new pilots to very complex scenarios. This forces new fighter pilots to learn many of the required fighter pilot skills in a more realistic environment. For example, the USAF expends nine student basic fighter maneuvering rides using canned fight parameters and set ups to show different sight pictures and teach the students how to execute in those situations. As a result, over time the students are

expected to learn how to apply the lessons they learned in those building block rides to more dynamic air-to-air combat scenarios. However, another option would be to start with more varied and diverse training scenarios that are designed to reach a missionized outcome and then have students learn many of the same lessons within the scenario. This difference is not used to create confusion or add to the complexity for fighter pilot training policy authors but instead to highlight that many of the basic tenants of fighter pilot training policy should not be taken for granted. There is utility to questioning all assumptions in current training policy in order to find ways to improve future training policy.

Limitations of the Study

The biggest limitation for the study was information access across many different organizations and stakeholders. The USAF and RAAF operate with unique security regulations and standard operating procedures (SOPs). Many of these security restrictions are different between each respective air force and are not conducive for a comparative study. The most time consuming portion of this study included trying to negotiate the approval and security concerns of all stakeholders. Although I believe the information in this study is of value to future policy makers, and also provides a positive social benefit, it is important to note that study does not address some of the most controversial issues within the fighter pilot training community because it would likely prevent this study from being published.

Security

Much of fighter pilot training is classified and not releasable to the public. As a result, I was only approved to explore specific aspects of the training policy and could not address many important topics concerning fighter pilot training. In general, procedures for handling classified information are well established. The challenge with this study was that documents themselves are classified as a complete document as official use only which is why I can not release my research records to the public and that I have published no sections of the syllabus. However, I was diligent to ensure I only included unclassified information in this study. In certain sections of Chapter 4 and 5 I was intentionally vague with some of the results to ensure I took the safest approach and ensured there was no question that all information in this study is unclassified.

Information Access and Approvals

This study required Walden University, USAF, and RAAF approval. Each organization has differing research procedures and requirements. I took great care to meet all of the requirements of all the organizations. As a result, there are missing segments of policy documents that I was not allowed to use and also limitations placed on which pilots I interviewed and how I conducted the interviews. However, having the opportunities to experience both systems first hand I feel I was able to effectively bridge the gaps of missing information while remaining within the requirements of all of the organizations involved in this project.

Distance

This project covered a four-year span and required coordination around the globe. USAF coordination was required in Arizona, Alabama, Washington D.C., and Hawaii. Coordination with the RAAF was conducted in New South Wales and the Australian Capital Territory. During the first two years of the study the researcher lived in Australia and had many difficulties communicating with individuals in the United States. Having moved back to the United States, I continue to have challenges contacting members in Australia.

Recommendations

Higher Classification Study

This study focused specifically on policy implications of the USAF and RAAF training programs. I believe a more in-depth classified study sponsored by the USAF and RAAF would be beneficial. The goal would be to conduct a comprehensive review of all aspects of the training programs to include classified information. This would significantly reduce the audience with access to the information but would provide the policy maker a better understanding of more of the challenges and considerations when developing fighter pilot training programs.

Studies comparing other stressful and highly technical and skill based professions

This study design is repeatable and could be applied to other highly stressful and technical training programs such as different military law enforcement, and medical training programs. There could be great utility in using the same research design in professions that do not have the same classification and approval concerns to evaluate if

punctuated events and policy feedbacks may have similar influences on policy development in different professions.

Training Studies

Although this study focused primarily on the policy process I only scratched the surface of the potential for future study of not just the policy but also the content of the training program. Learning style theory was used in this study purely as a classification tool to better understand how the policy is developed. However, fighter pilots' instructors and training course authors could likely benefit from further study focused more on fighter pilot instructional techniques. This would allow the researcher to further assess the utility of learning style theories while exploring the science of how students most efficiently learn high stress occupations. The following section will provide a brief explanation of some of the possibilities for future research of fighter pilot training techniques.

Learning and training theory. The basic premise of learning style theory is that individuals can be classified according to a particular style of learning that best represents their learning strengths (Panshler et al., 2008). Flemming and Mills' (as cited in Romanelli et al, 2009) visual auditory read/write and kinesthetic sensory (VARK) model was one of the most common and widely used models to explain how individuals learn (Hawk & Shah, 2007). The concept was built upon the idea that individuals use different neuro-linguistic programing models to learn most efficiently. Although the VARK model was used as the basis for this study, there are many other models that could be used to explore F-16 and F-18 training. In this study I used learning style theory because its a

readily accepted training model to help set up a policy comparison. I did not attempt to support, evaluate, or critisize learning style theory but only to use the construct as a comparative tool.

Learning modalities focusing on the VARK model could be used to further expand the study of fighter pilot training programs. The concept of learning modalities is another construct of learning style theory that predicts that sensory preferences affect how an individual learns (Romanelli, Bird & Ryan, 2009). The F-16 and F-18 training programs include components of each mode of the VARK model. Therefore, the VARK model provides a comprehensive framework to examine training programs. As an example, during F-16 training the student is first given a workbook to read before class that is designed for the reading and writing learner, the student then attends a lecture where an instructor discusses the new material for the auditory learner. The instructor uses power point slides with aircraft pictures and illustrations in-order to aid visual learners and next the pilots practice what they have learned in a simulator. One interpretation of learning style theory would suggest that a read-and-write oriented pilot could read a flight manual and then gain all the information they required to fly an airplane. In reality, this tactic would likely lead to disaster (Beigh, 2006). A more plausible interpretation of the theory would suggest that a read-and-write oriented student would be most successful by reading the course workbook ahead of time before class and then using class time to have questions answered and test his or her comprehension of the reading. An auditory or visual learner might be most effective by listening to the information the first time in class and then reviewing the information after class in the

work book to review concepts that did not make sense in the lecture. A tactile/kinesthetic learner might be more effective not reading the flight manual and climbing into the simulator with the inflight checklist and practicing the basic procedures of setting aircraft switches and controls to gain a basic understanding and then review the academic material later. However, flying training programs always have elements of each modality designed into the program (Carlson, 2011). Understanding how to maximize the integration of each style of learning while providing enough flexibility for students to focus on the mode that is most effective for each individual could be evaluated in future studies.

Implications

The multi-case study comparative analysis of the USAF F-16 and RAAF F-18 training explored how different training policies impact the effectiveness and efficiency of the training programs. The USAF and RAAF approach fighter pilot training differently and some of those differences were highlighted in this study. The USAF may wish to consider capitalizing on some of the high stress training techniques used by the RAAF to incorporate into the USAF training programs to expedite the training process during the current fighter pilot shortage. The USAF may want to decrease the volume of academic lessons and focus on delivering the most critical lessons closer to the flight-training phase of the program. The intent would be to provide the students more flights per week to gain proficiency faster with less time in between each training event.

The significance of improving fighter-training programs is that there is currently a fighter pilot shortage while there is also a resource and sortie generation shortage, which

leads to less efficient training and a higher overall cost in time and money to produce a new fighter pilot. The USAF needs to remain a good steward of taxpayer money by maximizing capability at the lowest possible cost. My research may provide policy makers new information that could be beneficial in shaping future training policy decisions. Improved fighter training policy decisions are important to positive social change because developing and maintaining proficient fighter pilots is important to the security and stability of the United States. Developing fighter pilots as cost effectively as possible helps save resources that the government can put to better use to improve the lives of its citizens. Another important contribution is that the study structure as well as the findings and recommendations could be applied to other high stress training programs. For example improved kinesthetic training techniques and servant leadership could be used by police, fire, and medical professions to further improve the service provided to citizens and ultimately contribute to positive social change.

Conclusion

My research examined the fighter pilot training policy process by comparing USAF and RAAF training policies. The focus of the research was on evaluating the policy development process by examining how policy feedback and punctuated policy events influenced policy development. Although the focus of the study was policy development, in order to understand that process it was important to investigate components of the training program events, instructional techniques, and overall training design. Specifically, the study provided a baseline for policy makers to compare and

contrast fighter-training policy and attempted to provide new information to improve evolving training programs while preserving national resources.

Organizational culture was also an important component to understanding the respective training programs and the interview process was critical to gaining context on how and why the training policies were developed. Although many cultural differences were explored during this study I would like to draw attention to quotes from a RAAF pilot and a USAF pilot to highlight a universal fighter pilot culture that transcends national boundaries.

The RAAF pilot stated:

> A fighter pilot is more than just a job description. It is a state of being. You have to believe to your core that this is what you were meant to be not just do. You are a warrior first and foremost. If you do not have this level of dedication you will be a pilot who fly's jets but not a fighter pilot.

The USAF pilot explained:

> Being a fighter pilot means that you are well trained, disciplined, and expected to win. That expectation drives a slight amount of aggression and arrogance within the community, but should be expected when your job depends on you to win every time you fly.

I believe this shared fighter pilot culture is why this study was possible and why it is important. It is an opportunity to "debrief" our training programs and leverage that shared culture to find new and improved ways to improve our craft to defend our countries. I hope that the information in this study will have utility for both current and

future USAF fighter training programs and will help fighter pilots maximize training and always “fly safe.”

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Appendix A: Permission to Conduct Research

TO: Walden University Office of Research Integrity and Compliance, Institutional Review Board for Ethical Standards and Research

FROM: Major James D. Smith, Student ID 00363046

SUBJECT: Permission to Conduct Research on USAF F-16 and RAAF F-18 Introductory Training Program

1. I am an active duty Major in the United States Air Force who is also a doctoral student with Walden University in the PhD Public Policy and Administration program. Per Walden University's Office of Research Integrity and Compliance, Institutional Review Board for Ethical Standards in Research, a doctoral student must receive permission from any respective agency to conduct a research study in their specialty or field.

2. This request letter is to grant permission to research based on the follow topic:

Comparative Analysis of the USAF F-16 and RAAF F-18 Training Programs

Brief synopsis: I will be conducting an in depth study comparing USAF F-16 and RAAF 18 introductory training policy. I will be exploring how and why specific training policies are developed and implemented and what can be learned and applied to future fighter training policies.

3. If approved, I will request permission from the USAF and RAAF to use unclassified training policy documents as primary data for the comparative analysis. Additionally, I will request to conduct a series of interviews with the following participants: up to ten F-16 and F-18 pilots.

Each interviewee requested has first hand knowledge of the training programs and interviews are important to my research as it will provide context and first hand perspective to the data collected from the policy documents.

4. All research and interviews completed on the fighter training programs for this dissertation will be UNCLASSIFIED. To ensure classified information will not be disclosed inadvertently, the dissertation proposal and final dissertation will be submitted to the office of the Secretary of the Air Force International Relations (SAF/IA), Washington D.C. and to the Royal Australian Air Force 2OCU commander, Williamtown AB, Australia prior to submission at Walden University.

4. Thank you for your assistance.

IRB Approval Email

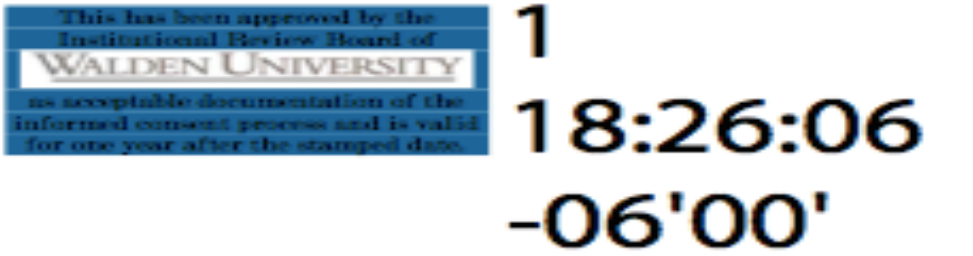
Dear Mr. Smith,

This email confirms receipt of the approval letter for the community research partner and also serves as your notification that Walden University has approved BOTH your doctoral study proposal and your application to the Institutional Review Board. As such, you are approved by Walden University to conduct research.

Congratulations!

Research Ethics Support Specialist , Office of Research Ethics and Compliance

IRB Chair, Walden University



Appendix B: Informed Consent

Any Pilot

You are asked to participate in a research study that addresses USAF F-16 and RAAF F-18 introductory training policy. This is an independent research case study and is not endorsed or sponsored by the United States Air Force. The statements and questions addressed by the researcher do not represent any individual who is associated or employed by the United States Air Force. The researcher is the only member of the Air Force that represents these questions but only in the capacity as a PhD Candidate.

You were selected for this research study because of your knowledge of aviation training and your experience as an F-18 fighter pilot. Please read this form in its entirety and feel free to ask any questions you have prior to consent to participation in this study.

Major James D. Smith is a researcher and Doctoral Candidate at Walden University and will be conducting this study. James has been an active duty Air Force service member for 14 years and is an F-16 pilot and has flown the F-18 while on an exchange tour with the Royal Australian Air Force. You probably met Maj Smith while he was on his exchange tour. However, considering the fact that Maj Smith has returned to the USAF, he will have no influence on your future career. James takes pride in conducting research to improve coalition fighter training programs. Hopefully, this research makes a positive difference.

Purpose of this Study

The purpose of this study is to compare USAF F-16 and RAAF F-18 introductory training policy in order to understand the current policy process and to identify best practices that can be implemented in future fighter training programs such as the F-35 Joint Strike Fighter (JSF).

Procedures

If you elect to participate in this study, you will be asked to complete a ten question written interview. The questions will be in a word document and you will email the completed document back to Maj Smith. Following publication of the dissertation I will provide you with a one to three page executive summary and a link to the dissertation.

1 Volunteer Agreement

Your participation in this research study is strictly voluntary. This means you can opt to decline to an interview or have your interview removed from this research. If you decide to participate, you can still decline during the study. You can decline to participate anytime during the research process and you may decline to answer any question that may be considered harmful or negatively affect the United States or Australia.

Risks and Benefits of Participation in this Study

It is a possibility some questions may be uncomfortable to answer. Please feel free to decline questions that appear to be uncomfortable or may impact the United States or Australia in a negative manner. If you experience any negative thoughts or emotions as a result of this questionnaire I encourage you to seek help from USAF or RAAF support agencies. For example the mental health office, Chaplin, and your chain of command have many voluntary and anonymous options to seek additional help if need.

There are no benefits for your participation in this study. Nevertheless, your professional expertise on this

matter will be noted as well as quoted and/or paraphrased in this research study, with your permission. This information can be used to modify future fighter training policy. Additionally, potential conflicts of interest may arise due to my position within the USAF and RAAF. I will ensure in this research study that I only serve in the capacity as a PhD candidate and researcher for Walden University. My position as a military service member working in the USAF and RAAF is irrelevant to this process.

Compensation

None

Confidentiality/Privacy

With your permission, your statements will be quoted and/or paraphrased in this research study. Your information will not be used outside of this research study. Also, with your permission, the research will include information on your position and experience but will not use your name. If you choose not to have your position referenced, the researcher will/must maintain your anonymity. For USAF and RAAF participants a remote but possible exception to confidentiality would be if I learn of an illegal activity or if my dataset is subpoenaed. Although unlikely it is possible any emails or responses made on USAF or RAAF systems could be requested for review by the USAF or RAAF. In the event the USAF or RAAF does request to review research data I will ask to remove participant identifiable information before submission. However, I will comply with USAF and RAAF requests for information concerning respective USAF and RAAF members. You may keep copies of all documents submitted to you during this process. All information will be kept confidential and data will be kept secure on a personal laptop, in a password-protected folder. Finally, data will be kept for a period of at least five years, as required by the university.

Contacts and Questions

If you want to talk privately about your rights as a participant, you can call Dr. Leilani Endicott. She is the Walden University representative who can discuss this with you. Her phone number is 612-312-1210. **The researcher will send you a copy of this form to keep.**

Additional Procedures for RAAF Members as Recommended by the Defence People Research Low Risk Ethics Panel

- Only unclassified information is being sought and should be disclosed and that anything potentially identifiable (about other persons) or classified information will be deleted from interview records.
- RAAF pilot responses will be stored separately from their names and email addresses to ensure confidentiality. Once I receive your email I will save your responses in a password protected folder and your name and email address will not be stored in this folder.
- Participants need not give any reason if they decline to participate and will in no way have any detrimental effect on their career.
- If you have any complaints with regards to the manner in which the project is conducted please contact the following Defence representative:

Executive Officer
Defence People Research Low Risk Ethics Panel Directorate of People Intelligence & Research Workforce Planning Branch Department of Defence
BP33-4-016 | Brindabella Park | PO Box 7927 | Canberra BC | ACT 2610 P: (02) 6127 2155 | F: (02) 6127 2261

LREP: peopleresearch.ethics@defence.gov.au

- The RAAF fighter pilot community is small and when position and even experience are reported, respondents may still be easily identifiable. If you have any concerns please request to not have your experience or position referenced in the study. You may also choose not to participate in the study. Your name will never be included in the study.

- If you experience discomfort throughout the process you may contact your chain of command or the Chaplain for further assistance. Additionally, you may contact the following organization for further information and support.

  Defence People Research Low Risk Ethics Panel Directorate of People Intelligence & Research Workforce Planning Branch Department of Defence
  BP33-4-016 | Brindabella Park | PO Box 7927 | Canberra BC | ACT 2610 P: (02) 6127 2155 | F: (02) 6127 2261
  LREP: peopleresearch.ethics@defence.gov.au

- The dissertation will be unclassified and will be available to the public through the Walden University Website. As a member of the study I will also provide you an executive summary and a link to the dissertation. I will also provide the executive summary and the link to the 2OCU Commander for wider RAAF dissemination. The intended audience for this study is to all fighter pilots and fighter training policy makers.

Additional RAAF Points for Consideration as Highlighted by Defence People Research Low Risk Ethics Panel:

- Participants will be providing written responses to the interview questions so you will have the ability to ensure they are satisfied with the accuracy and completeness of responses prior to submission. If I elect to use partial responses in the research, I will take care to ensure the partial response is not taken out of context. I will offer the participants the option of reviewing /verifying their transcript before analysis for the dissertation. Since the participant will write the interview I do not expect this to be an issue but will coordinate with you if the need arises.
- If you choose not to have your position included in the research paper, I will note the restriction and keep it with the collected data.
- I believe this research will provide future benefit to the fighter pilot community because it will facilitate open dialogue, transparency, and a better understanding of how the USAF and RAAF train fighter pilots. Improved understanding will likely lead to more effective fighter pilot training policies. I had the opportunity to fly training and combat missions with many of you and I think passing that experience onto the next generation of fighter pilots and policy makers is a worthy endeavor.

Consent Statement

I have read the above information and I feel I understand the study well enough to make a decision about my involvement. By signing below, I consent and understand that I am agreeing to the terms described above.

Name of the Participant (PRINT) _____

Signature of the Participant _____

Date of Consent _____

Name of the Researcher (PRINT) _____

Signature of the Researcher _____

Date of Consent _____

Group B: RAAF F-18 Instructor Pilot

You are asked to participate in a research study that addresses USAF F-16 and RAAF F-18 introductory training policy. This is an independent research case study and is not endorsed or sponsored by the United States Air Force. The statements and questions addressed by the researcher do not represent any individual who is associated or employed by the United States Air Force. The researcher is the only member of the Air Force that represents these questions but only in the capacity as a PhD Candidate.

You were selected for this research study because of your knowledge of aviation training and your experience as a fighter pilot. Please read this form in its entirety and feel free to ask any questions you have prior to consent to participation in this study.

Major James D. Smith is a researcher and Doctoral Candidate at Walden University and will be conducting this study. James has been an active duty Air Force service member for 14 years and is an F-16 pilot and has flown the F-18 while on an exchange tour with the Royal Australian Air Force. You probably met Maj Smith while he was on his exchange tour. However, considering the fact that Maj Smith has returned to the USAF and was a peer while in the RAAF, he will have no influence on your future career. James takes pride in conducting research to improve coalition fighter training programs. Hopefully, this research makes a positive difference.

Purpose of this Study

The purpose of this study is to compare USAF F-16 and RAAF F-18 introductory training policy in order to understand the current policy process and to identify best practices that can be implemented in future fighter training programs such as the F-35 Joint Strike Fighter (JSF).

Procedures

If you elect to participate in this study, you will be asked to complete a ten question written interview. The questions will be in a word document and you will email the completed document back to Maj Smith. Following publication of the dissertation I will provide you with a one to three page executive summary and a link to the dissertation.

2 **Volunteer Agreement**

Your participation in this research study is strictly voluntary. This means you can opt to decline to an interview or have your interview removed from this research. If you decide to participate, you can still decline during the study. You can decline to participate anytime during the research process and you may decline to answer any question that may be considered harmful or negatively affect the United States or Australia.

Risks and Benefits of Participation in this Study

It is a possibility some questions may be uncomfortable to answer. Please feel free to decline questions that appear to be uncomfortable or may impact the United States or Australia in a negative manner. If you experience any negative thoughts or emotions as a result of this questionnaire I encourage you to seek help from USAF or RAAF support agencies. For example the mental health office, Chaplin, and your chain of command have many voluntary and anonymous options to seek additional help if need.

There are no benefits for your participation in this study. Nevertheless, your professional expertise on this matter will be noted as well as quoted and/or paraphrased in this research study, with your permission. This information can be used to modify future fighter training policy. Additionally, potential conflicts of interest may arise due to my position within the USAF and RAAF. I will ensure in this research study that I only serve in the capacity as a PhD candidate and researcher for Walden University. My position as a military service member working in the USAF and RAAF is irrelevant to this process.

Compensation

None

Confidentiality/Privacy

With your permission, your statements will be quoted and/or paraphrased in this research study. Your information will not be used outside of this research study. Also, with your permission, the research will include information on your position and experience but will not use your name. If you choose not to have your position referenced, the researcher will/must maintain your anonymity. For USAF and RAAF participants a remote but possible exception to confidentiality would be if I learn of an illegal activity or if my dataset is subpoenaed. Although unlikely it is possible any emails or responses made on USAF or RAAF systems could be requested for review by the USAF or RAAF. In the event the USAF or RAAF does request to review research data I will ask to remove participant identifiable information before submission. However, I will comply with USAF and RAAF requests for information concerning respective USAF and RAAF members. You may keep copies of all documents submitted to you during this process. All information will be kept confidential and data will be kept secure on a personal laptop, in a password-protected folder. Finally, data will be kept for a period of at least five years, as required by the university.

Contacts and Questions

If you want to talk privately about your rights as a participant, you can call . She is the Walden University representative who can discuss this with you. Her phone number is 612-312-1210. **The researcher will send you a copy of this form to keep.**

Additional Procedures for RAAF Members as Recommended by the Defence People Research Low Risk Ethics Panel

- Only unclassified information is being sought and should be disclosed and that anything potentially identifiable (about other persons) or classified information will be deleted from interview records.
- RAAF pilot responses will be stored separately from their names and email addresses to ensure confidentiality. Once I receive your email I will save your responses in a password protected folder and your name and email address will not be stored in this folder.
- Participants need not give any reason if they decline to participate and will in no way have any detrimental effect on their career.
- If you have any complaints with regards to the manner in which the project is conducted please contact the following Defence representative:

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  Defence People Research Low Risk Ethics Panel Directorate of People Intelligence & Research Workforce Planning Branch Department of Defence
  BP33-4-016 | Brindabella Park | PO Box 7927 | Canberra BC | ACT 2610 P: (02) 6127 2155 | F: (02) 6127 2261
  LREP: peopleresearch.ethics@defence.gov.au

- The RAAF fighter pilot community is small and when position and even experience are reported, respondents may still be easily identifiable. If you have any concerns please request to not have your experience or position referenced in the study. You may also choose not to participate in the study. Your name will never be included in the study.

- If you experience discomfort throughout the process you may contact your chain of command or the Chaplain for further assistance. Additionally, you may contact the following organization for further information and support.

  Defence People Research Low Risk Ethics Panel Directorate of People Intelligence & Research Workforce Planning Branch Department of Defence
  BP33-4-016 | Brindabella Park | PO Box 7927 | Canberra BC | ACT 2610 P: (02) 6127 2155 | F: (02) 6127 2261
  LREP: peopleresearch.ethics@defence.gov.au

- The dissertation will be unclassified and will be available to the public through the Walden University

Website. As a member of the study I will also provide you an executive summary and a link to the dissertation. I will also provide the executive summary and the link to the 2OCU Commander for wider RAAF dissemination. The intended audience for this study is to all fighter pilots and fighter training policy makers.

Additional RAAF Points for Consideration as Highlighted by Defence People Research Low Risk Ethics Panel:

- Participants will be providing written responses to the interview questions so you will have the ability to ensure they are satisfied with the accuracy and completeness of responses prior to submission. If I elect to use partial responses in the research, I will take care to ensure the partial response is not taken out of context. I will offer the participants the option of reviewing /verifying their transcript before analysis for the dissertation. Since the participant will write the interview I do not expect this to be an issue but will coordinate with you if the need arises.
- If you choose not to have your position included in the research paper, I will note the restriction and keep it with the collected data.
- I believe this research will provide future benefit to the fighter pilot community because it will facilitate open dialogue, transparency, and a better understanding of how the USAF and RAAF train fighter pilots. Improved understanding will likely lead to more effective fighter pilot training policies. I had the opportunity to fly training and combat missions with many of you and I think passing that experience onto the next generation of fighter pilots and policy makers is a worthy endeavor.

Consent Statement

I have read the above information and I feel I understand the study well enough to make a decision about my involvement. By signing below, I consent and understand that I am agreeing to the terms described above.

Name of the Participant (PRINT) _____

Signature of the Participant _____

Date of Consent _____

Name of the Researcher (PRINT) _____

Signature of the Researcher _____

Date of Consent _____

Group C: USAF F-16 Pilots

You are asked to participate in a research study that addresses USAF F-16 and RAAF F-18 introductory training policy. This is an independent research case study and is not endorsed or sponsored by the United States Air Force. The statements and questions addressed by the researcher do not represent any individual who is associated or employed by the United States Air Force. The researcher is the only member of the Air Force that represents these questions but only in the capacity as a PhD Candidate.

You were selected for this research study because of your knowledge of aviation training and your experience as a fighter pilot. Please read this form in its entirety and feel free to ask any questions you have prior to consent to participation in this study.

Major James D. Smith is a researcher and Doctoral Candidate at Walden University and will be conducting this study. James has been an active duty Air Force service member for 14 years and is an F-16 pilot and has flown the F-18 while on an exchange tour with the Royal Australian Air Force. Maj Smith is still in the USAF and could potentially work in your USAF organization or supervise you in the future. Therefore, your responses will remain anonymous and Maj Smith will not know which F-16 pilots completed the questionnaire. Once you have completed the questionnaire your responses will be saved to a specified USAF network drive from which Maj Smith will retrieve the saved document. James takes pride in conducting research to improve coalition fighter training programs. Hopefully, this research makes a positive difference.

Purpose of this Study

The purpose of this study is to compare USAF F-16 and RAAF F-18 introductory training policy in order to understand the current policy process and to identify best practices that can be implemented in future fighter training programs such as the F-35 Joint Strike Fighter (JSF).

Procedures

If you elect to participate in this study, you will be asked to complete a ten question written interview. The questions will be in a word document and your responses will be saved anonymously to a specified USAF network drive. Following publication of the dissertation I will have a one to three page executive summary and a link to the dissertation available for all F-16 pilots that were recruited for this study regardless if they participated or not. This step will ensure the information is available without sacrificing anonymity.

3 Volunteer Agreement

Your participation in this research study is strictly voluntary. This means you can opt to decline to an interview or have your interview removed from this research. If you decide to participate, you can still decline during the study. You can decline to participate anytime during the research process and you may decline to answer any question that may be considered harmful or negatively affect the United States or Australia. The only caveat is that once the drive is saved anonymously you would need to contact Maj Smith, thereby identifying yourself, so that Maj Smith is aware of which questionnaire to remove.

Risks and Benefits of Participation in this Study

It is a possibility some questions may be uncomfortable to answer. Please feel free to decline questions that appear to be uncomfortable or may impact the United States or Australia in a negative manner. If you experience any negative thoughts or emotions as a result of this questionnaire I encourage you to seek help from USAF or RAAF support agencies. For example the mental health office, Chaplin, and your chain of command have many voluntary and anonymous options to seek additional help if need.

There are no benefits for your participation in this study. Nevertheless, your professional expertise on this matter will be noted as well as quoted and/or paraphrased in this research study. For Group C your permission to use your information is granted when you anonymously save your responses to the specified USAF network drive. This information can be used to modify future fighter training policy. Additionally, potential conflicts of interest may arise due to my position within the USAF and RAAF. I will ensure in this research study that I only serve in the capacity as a PhD candidate and researcher for Walden University. My position as a military service member working in the USAF and RAAF is irrelevant to this process.

Compensation

None

Confidentiality/Privacy

Your implied permission to use your questionnaire occurs after saving your document anonymously to the specified USAF network drive. Your statements will be quoted and/or paraphrased in this research study. Your information will not be used outside of this research study. Also, with your permission, the research will include information on your position and experience. Your name will not be available to Maj Smith. If you choose not to have your position referenced, the researcher will/must maintain your anonymity. For USAF and RAAF participants a remote but possible exception to confidentiality would be if I learn of an illegal activity or if my dataset is subpoenaed. Although unlikely it is possible any emails or responses made on USAF or RAAF systems could be requested for review by the USAF or RAAF. In the event the USAF or RAAF does request to review research data I will ask to remove participant identifiable information before submission. However, I will comply with USAF and RAAF requests for information concerning respective USAF and RAAF members. You may keep copies of all documents submitted to you during this process. All information will be kept confidential and data will be kept secure on a personal laptop, in a password-protected folder. Finally, data will be kept for a period of at least five years, as required by the university.

Contacts and Questions

If you want to talk privately about your rights as a participant, you can call Dr. . She is the Walden University representative who can discuss this with you. Her phone number is 612-312-1210. **The researcher will send you a copy of this form to keep.**

Consent Statement

You have implied consent for Maj Smith to use your responses to the questionnaire when you save the completed questionnaire anonymously to the specified USAF network drive. There is no need to sign or return this form.

Group D: USAF F-16 Instructor Pilots

You are asked to participate in a research study that addresses USAF F-16 and RAAF F-18 introductory training policy. This is an independent research case study and is not endorsed or sponsored by the United States Air Force. The statements and questions addressed by the researcher do not represent any individual who is associated or employed by the United States Air Force. The researcher is the only member of the Air Force that represents these questions but only in the capacity as a PhD Candidate.

You were selected for this research study because of your knowledge of aviation training and your experience as a fighter pilot. Please read this form in its entirety and feel free to ask any questions you have prior to consent to participation in this study.

Major James D. Smith is a researcher and Doctoral Candidate at Walden University and will be conducting this study. James has been an active duty Air Force service member for 14 years and is an F-16 pilot and has flown the F-18 while on an exchange tour with the Royal Australian Air Force. You were selected for the study in part because you are in the same peer group as Maj Smith and it is highly unlikely he will supervise you in the future. James takes pride in conducting research to improve coalition fighter training programs. Hopefully, this research makes a positive difference.

Purpose of this Study

The purpose of this study is to compare USAF F-16 and RAAF F-18 introductory training policy in order to understand the current policy process and to identify best practices that can be implemented in future fighter training programs such as the F-35 Joint Strike Fighter (JSF).

Procedures

If you elect to participate in this study, you will be asked to complete a ten question written interview. The questions will be in a word document and you will email the completed document back to Maj Smith. Following publication of the dissertation I will provide you with a one to three page executive summary and a link to the dissertation.

4 Volunteer Agreement

Your participation in this research study is strictly voluntary. This means you can opt to decline to an interview or have your interview removed from this research. If you decide to participate, you can still decline during the study. You can decline to participate anytime during the research process and you may decline to answer any question that may be considered harmful or negatively affect the United States or Australia.

Risks and Benefits of Participation in this Study

It is a possibility some questions may be uncomfortable to answer. Please feel free to decline questions that appear to be uncomfortable or may impact the United States or Australia in a negative manner. If you experience any negative thoughts or emotions as a result of this questionnaire I encourage you to seek help from USAF or RAAF support agencies. For example the mental health office, Chaplin, and your chain of command have many voluntary and anonymous options to seek additional help if need.

There are no benefits for your participation in this study. Nevertheless, your professional expertise on this matter will be noted as well as quoted and/or paraphrased in this research study, with your permission. This information can be used to modify future fighter training policy. Additionally, potential conflicts of interest may arise due to my position within the USAF and RAAF. I will ensure in this research study that I only

serve in the capacity as a PhD candidate and researcher for Walden University. My position as a military service member working in the USAF and RAAF is irrelevant to this process.

Compensation

None

Confidentiality/Privacy

With your permission, your statements will be quoted and/or paraphrased in this research study. Your information will not be used outside of this research study. Also, with your permission, the research will include information on your position and experience but will not use your name. If you choose not to have your position referenced, the researcher will/must maintain your anonymity. For USAF and RAAF participants a remote but possible exception to confidentiality would be if I learn of an illegal activity or if my dataset is subpoenaed. Although unlikely it is possible any emails or responses made on USAF or RAAF systems could be requested for review by the USAF or RAAF. In the event the USAF or RAAF does request to review research data I will ask to remove participant identifiable information before submission. However, I will comply with USAF and RAAF requests for information concerning respective USAF and RAAF members. You may keep copies of all documents submitted to you during this process. All information will be kept confidential and data will be kept secure on a personal laptop, in a password-protected folder. Finally, data will be kept for a period of at least five years, as required by the university.

Contacts and Questions

If you want to talk privately about your rights as a participant, you can call . She is the Walden University representative who can discuss this with you. Her phone number is 612-312-1210. **The researcher will send you a copy of this form to keep.**

Consent Statement

I have read the above information and I feel I understand the study well enough to make a decision about my involvement. By signing below, I consent and understand that I am agreeing to the terms described above.

Name of the Participant (PRINT) _____

Signature of the Participant _____

Date of Consent _____

Name of the Researcher (PRINT) _____

Signature of the Researcher _____

Date of Consent _____

Group E: USAF F-15E Pilot

You are asked to participate in a research study that addresses USAF F-16 and RAAF F-18 introductory training policy. This is an independent research case study and is not endorsed or sponsored by the United States Air Force. The statements and questions addressed by the researcher do not represent any individual who is associated or employed by the United States Air Force. The researcher is the only member of the Air Force that represents these questions but only in the capacity as a PhD Candidate.

You were selected for this research study because of your knowledge of aviation training and your experience as a fighter pilot. Please read this form in its entirety and feel free to ask any questions you have prior to consent to participation in this study.

Major James D. Smith is a researcher and Doctoral Candidate at Walden University and will be conducting this study. James has been an active duty Air Force service member for 14 years and is an F-16 pilot and has flown the F-18 while on an exchange tour with the Royal Australian Air Force. You were selected for this study in part because you fly a different airframe as Maj Smith and it is highly unlikely he could supervise you in the future. James takes pride in conducting research to improve coalition fighter training programs. Hopefully, this research makes a positive difference.

Purpose of this Study

The purpose of this study is to compare USAF F-16 and RAAF F-18 introductory training policy in order to understand the current policy process and to identify best practices that can be implemented in future fighter training programs such as the F-35 Joint Strike Fighter (JSF).

Procedures

If you elect to participate in this study, you will be asked to complete a ten question written interview. The questions will be in a word document and you will email the completed document back to Maj Smith. Following publication of the dissertation I will provide you with a one to three page executive summary and a link to the dissertation.

5 Volunteer Agreement

Your participation in this research study is strictly voluntary. This means you can opt to decline to an interview or have your interview removed from this research. If you decide to participate, you can still decline during the study. You can decline to participate anytime during the research process and you may decline to answer any question that may be considered harmful or negatively affect the United States or Australia.

Risks and Benefits of Participation in this Study

It is a possibility some questions may be uncomfortable to answer. Please feel free to decline questions that appear to be uncomfortable or may impact the United States or Australia in a negative manner. If you experience any negative thoughts or emotions as a result of this questionnaire I encourage you to seek help from USAF or RAAF support agencies. For example the mental health office, Chaplin, and your chain of command have many voluntary and anonymous options to seek additional help if need.

There are no benefits for your participation in this study. Nevertheless, your professional expertise on this matter will be noted as well as quoted and/or paraphrased in this research study, with your permission. This information can be used to modify future fighter training policy. Additionally, potential conflicts of interest may arise due to my position within the USAF and RAAF. I will ensure in this research study that I only

serve in the capacity as a PhD candidate and researcher for Walden University. My position as a military service member working in the USAF and RAAF is irrelevant to this process.

Compensation

None

Confidentiality/Privacy

With your permission, your statements will be quoted and/or paraphrased in this research study. Your information will not be used outside of this research study. Also, with your permission, the research will include information on your position and experience but will not use your name. If you choose not to have your position referenced, the researcher will/must maintain your anonymity. For USAF and RAAF participants a remote but possible exception to confidentiality would be if I learn of an illegal activity or if my dataset is subpoenaed. Although unlikely it is possible any emails or responses made on USAF or RAAF systems could be requested for review by the USAF or RAAF. In the event the USAF or RAAF does request to review research data I will ask to remove participant identifiable information before submission. However, I will comply with USAF and RAAF requests for information concerning respective USAF and RAAF members. You may keep copies of all documents submitted to you during this process. All information will be kept confidential and data will be kept secure on a personal laptop, in a password-protected folder. Finally, data will be kept for a period of at least five years, as required by the university.

Contacts and Questions

If you want to talk privately about your rights as a participant, you can call Dr. . She is the Walden University representative who can discuss this with you. Her phone number is 612-312-1210. **The researcher will send you a copy of this form to keep.**

Consent Statement

I have read the above information and I feel I understand the study well enough to make a decision about my involvement. By signing below, I consent and understand that I am agreeing to the terms described above.

Name of the Participant (PRINT) _____

Signature of the Participant _____

Date of Consent _____

Name of the Researcher (PRINT) _____

Signature of the Researcher _____

Date of Consent _____

Group F: RAAF F-18 Pilot Who Served as a USAF-22 Exchange Pilot

You are asked to participate in a research study that addresses USAF F-16 and RAAF F-18 introductory training policy. This is an independent research case study and is not endorsed or sponsored by the United States Air Force. The statements and questions addressed by the researcher do not represent any individual who is associated or employed by the United States Air Force. The researcher is the only member of the Air Force that represents these questions but only in the capacity as a PhD Candidate.

You were selected for this research study because of your knowledge of aviation training and your experience as a fighter pilot. Please read this form in its entirety and feel free to ask any questions you have prior to consent to participation in this study.

Major James D. Smith is a researcher and Doctoral Candidate at Walden University and will be conducting this study. James has been an active duty Air Force service member for 14 years and is an F-16 pilot and has flown the F-18 while on an exchange tour with the Royal Australian Air Force. You probably met Maj Smith while he was on his exchange tour. However, considering the fact that Maj Smith has returned to the USAF and was a peer while in the RAAF, he will have no influence on your future career. James takes pride in conducting research to improve coalition fighter training programs. Hopefully, this research makes a positive difference.

Purpose of this Study

The purpose of this study is to compare USAF F-16 and RAAF F-18 introductory training policy in order to understand the current policy process and to identify best practices that can be implemented in future fighter training programs such as the F-35 Joint Strike Fighter (JSF).

Procedures

If you elect to participate in this study, you will be asked to complete a ten question written interview. The questions will be in a word document and you will email the completed document back to Maj Smith. Following publication of the dissertation I will provide you with a one to three page executive summary and a link to the dissertation.

6 **Volunteer Agreement**

Your participation in this research study is strictly voluntary. This means you can opt to decline to an interview or have your interview removed from this research. If you decide to participate, you can still decline during the study. You can decline to participate anytime during the research process and you may decline to answer any question that may be considered harmful or negatively affect the United States or Australia.

Risks and Benefits of Participation in this Study

It is a possibility some questions may be uncomfortable to answer. Please feel free to decline questions that appear to be uncomfortable or may impact the United States or Australia in a negative manner. If you experience any negative thoughts or emotions as a result of this questionnaire I encourage you to seek help from USAF or RAAF support agencies. For example the mental health office, Chaplin, and your chain of command have many voluntary and anonymous options to seek additional help if need.

There are no benefits for your participation in this study. Nevertheless, your professional expertise on this matter will be noted as well as quoted and/or paraphrased in this research study, with your permission. This information can be used to modify future fighter training policy. Additionally, potential conflicts of interest may arise due to my position within the USAF and RAAF. I will ensure in this research study that I only serve in the capacity as a PhD candidate and researcher for Walden University. My position as a military service member working in the USAF and RAAF is irrelevant to this process.

Compensation

None

Confidentiality/Privacy

With your permission, your statements will be quoted and/or paraphrased in this research study. Your information will not be used outside of this research study. Also, with your permission, the research will include information on your position and experience but will not use your name. If you choose not to have your position referenced, the researcher will/must maintain your anonymity. For USAF and RAAF participants a remote but possible exception to confidentiality would be if I learn of an illegal activity or if my dataset is subpoenaed. Although unlikely it is possible any emails or responses made on USAF or RAAF systems could be requested for review by the USAF or RAAF. In the event the USAF or RAAF does request to review research data I will ask to remove participant identifiable information before submission. However, I will comply with USAF and RAAF requests for information concerning respective USAF and RAAF members. You may keep copies of all documents submitted to you during this process. All information will be kept confidential and data will be kept secure on a personal laptop, in a password-protected folder. Finally, data will be kept for a period of at least five years, as required by the university.

Contacts and Questions

If you want to talk privately about your rights as a participant, you can call Dr. . She is the Walden University representative who can discuss this with you. Her phone number is 612-312-1210. **The researcher will send you a copy of this form to keep.**

Additional Procedures for RAAF Members as Recommended by the Defence People Research Low Risk Ethics Panel

- Only unclassified information is being sought and should be disclosed and that anything potentially identifiable (about other persons) or classified information will be deleted from interview records.
- RAAF pilot responses will be stored separately from their names and email addresses to ensure confidentiality. Once I receive your email I will save your responses in a password protected folder and your name and email address will not be stored in this folder.
- Participants need not give any reason if they decline to participate and will in no way have any detrimental effect on their career.
- If you have any complaints with regards to the manner in which the project is conducted please contact the following Defence representative:

  Executive Officer
  Defence People Research Low Risk Ethics Panel Directorate of People Intelligence & Research Workforce Planning Branch Department of Defence
  BP33-4-016 | Brindabella Park | PO Box 7927 | Canberra BC | ACT 2610 P: (02) 6127 2155 | F: (02) 6127 2261
  LREP: peopleresearch.ethics@defence.gov.au

- The RAAF fighter pilot community is small and when position and even experience are reported, respondents may still be easily identifiable. If you have any concerns please request to not have your experience or position referenced in the study. You may also choose not to participate in the study. Your name will never be included in the study.

- If you experience discomfort throughout the process you may contact your chain of command or the Chaplain for further assistance. Additionally, you may contact the following organization for further information and support.

  Defence People Research Low Risk Ethics Panel Directorate of People Intelligence & Research Workforce Planning Branch Department of Defence
  BP33-4-016 | Brindabella Park | PO Box 7927 | Canberra BC | ACT 2610 P: (02) 6127 2155 | F: (02) 6127 2261
  LREP: peopleresearch.ethics@defence.gov.au

- The dissertation will be unclassified and will be available to the public through the Walden University Website. As a member of the study I will also provide you an executive summary and a link to the dissertation. I will also provide the executive summary and the link to the 2OCU Commander for wider RAAF dissemination. The intended audience for this study is to all fighter pilots and fighter training policy makers.

Additional RAAF Points for Consideration as Highlighted by Defence People Research Low Risk Ethics Panel:

- Participants will be providing written responses to the interview questions so you will have the ability to ensure they are satisfied with the accuracy and completeness of responses prior to submission. If I elect to use partial responses in the research, I will take care to ensure the partial response is not taken out of context. I will offer the participants the option of reviewing /verifying their transcript before analysis for the dissertation. Since the participant will write the interview I do not expect this to be an issue but will coordinate with you if the need arises.
- If you choose not to have your position included in the research paper, I will note the restriction and keep it with the collected data.
- I believe this research will provide future benefit to the fighter pilot community because it will facilitate open dialogue, transparency, and a better understanding of how the USAF and RAAF train fighter pilots. Improved understanding will likely lead to more effective fighter pilot training policies. I had the opportunity to fly training and combat missions with many of you and I think passing that experience onto the next generation of fighter pilots and policy makers is a worthy endeavor.

Consent Statement

I have read the above information and I feel I understand the study well enough to make a decision about my involvement. By signing below, I consent and understand that I am agreeing to the terms described above.

Name of the Participant (PRINT) _____

Signature of the Participant _____

Date of Consent _____

Name of the Researcher (PRINT) _____

Signature of the Researcher _____

Date of Consent _____

Appendix C: Interview Protocol

Fighter Pilot Training Policy Interview

Nationality:
Fighter Aircraft Flow:
Hours in Each Aircraft:
Quals (Wgn man, Flt Ld, IP, Wpns Officer, MC):
Exchange Officer: Yes/No

Questions:

1. What changes have you seen in fighter pilot training philosophy, methods, and technology during your career?

2. Do you think the changes have improved or hindered the quality of fighter pilots?

3. What is the biggest change to fighter pilot training policy you would like to see implemented in the future?

4. When preparing for flight training what techniques do you find most effective to facilitate your learning? For example, do you prefer to read study material, chair fly, work in groups, or obtain help from other students and instructors? Additionally, during training sorties and simulators is your performance best when an instructor demonstrates tasks and instantly corrects your mistakes or do you prefer to receive instruction in the brief and debrief and only receive inputs concerning safety of flight while airborne?

5. Describe what you perceive to be the perfect balance of academic, simulator, and flight training to maximize your learning as a fighter pilot?

6. Do you think improved simulator capabilities, aircraft upgrades, and new aircraft such as the F-35 will allow for a reduction in flight hours to maintain the same combat readiness? Please explain your rationale.

7. What do you see as the best part of each fighter training program you have experienced that you would offer to allied partners to improve their training policy and programs?

8. Describe your thoughts on what it means to be a fighter pilot and your perspective on the culture of the fighter pilot community:

9. What feedback would you provide your previous instructors and course support agencies to improve future training programs?

10. Please draw upon your experience and provide any additional thoughts, opinions, observations, or stories you would like to share concerning fighter pilot training, fighter pilot culture, the future of fighter aircraft or the future of the fighter pilot.

Appendix D: Initial Contact E-mail

Good Morning/Evening (Participant), My name is James Smith and I would like to ask you to participate in a research study.

I am a Doctoral Candidate at Walden University. In order to fulfill the requirements to obtain a Ph.D. in Public Policy and Administration, I am conducting a qualitative research case study on the USAF F-16 and RAAF F-18 fighter pilot training policy. As a PhD Candidate, I am also an active duty Air Force F-16 pilot with 14 years of service, who has knowledge of fighter training programs.

If you agree to this study, you will be asked to complete a 30 – 45 minute written interview over email.

In the questionnaire, I will ask you a series of questions that relate to the introductory fighter training programs and policy as well as fighter pilot culture based on your professional expertise. No precise hypotheses are being tested and this qualitative research case study is intended to gain understanding of how fighter pilot training policy is developed and how it can be improved in the future.

After the interview, you have the right to retract and/or clarify any statement you made. Revised copies of the transcriptions will be e-mailed to you in a summary of the results.

Your participation and professional expertise is definitely appreciated and extremely valuable to this research study. Additionally, your participation in this research will immensely assist in filling an information gap in the current literature involving fighter pilot training policy.

Your consideration to participate in this qualitative research study is greatly appreciated. If you have any questions or concerns, please do not hesitate to contact me at your earliest convenience. If you would like to participate in this study, please respond to this e-mail or call me at the information listed below.

Once again, thank you for your consideration and I am looking forward to your response!

Very Respectfully,

Maj James “Kane” Smith

Appendix E: Debriefing Form

Title of Research Study:

Comparative Analysis of the USAF F-16 and RAAF F-18 Training Programs

Statement of Appreciation:

I would like thank you for your time and cooperation through the interview process. Your experience and expertise are vital and what you have provided will be an asset to the success of this qualitative research case study:

Brief Synopsis of Research Study:

The purpose of this qualitative study is to compare and understand the differences between USAF F-16 training and RAAF F-18 training policy in order to provide policy makers new knowledge to improve future fighter training programs such as the F-35 program.

Point of Contact:

If you have questions about this study, would like to know more information about the topic, or would like to receive a reproduction of this research study when it is finalized, please contact: Researcher: James D. Smith

Point of Contact about your rights in this experiment:

Walden University Institutional Review Board Email: irb@waldenu.edu

Thank you again for your participation!

Cheers,
James "Kane" Smith
Phd Candidate
Student ID: 00363046
PhD Public Policy & Administration Program
Walden University

Appendix F: Confidentiality Agreement

Name of Signer:

During the course of my activity in collecting data for this research: "Comparative Analysis of the USAF F-16 and RAAF F-18 Training Programs", I will have access to information, which is confidential and should not be disclosed. I acknowledge that the information must remain confidential, and that improper disclosure of confidential information can be damaging to the participant.

By signing this Confidentiality Agreement I acknowledge and agree that:

I will not disclose or discuss any confidential information with others, including friends or family.

I will not in any way divulge, copy, release, sell, loan, alter or destroy any confidential information except as properly authorized.

I will not discuss confidential information where others can overhear the conversation. I understand that it is not acceptable to discuss confidential information even if the participant's name is not used.

I will not make any unauthorized transmissions, inquiries, modification or purging of confidential information.

I agree that my obligations under this agreement will continue after termination of the job that I will perform.

I understand that violation of this agreement will have legal implications.

I will only access or use systems or devices I'm officially authorized to access and I will not demonstrate the operation or function of systems or devices to unauthorized individuals.

Signing this document, I acknowledge that I have read the agreement and I agree to

comply with all the terms and conditions stated above.

Print Name _____ (researcher)

Signature _____

Date_____

Print Name _____ (data analysis consultant or transcriber)

Signature _____

Date _____

Appendix G: Permission to Conduct Research

TO: Secretary of the Air Force International Relations Office

FROM: Major James D. Smith, Walden University Student ID 00363046

SUBJECT: Permission to Conduct Research on USAF F-16 and RAAF F-18 Introductory Training Program

1. I am an active duty Major in the United States Air Force who is also a doctoral student with Walden University in the PhD Public Policy and Administration program. Per Walden University's Office of Research Integrity and Compliance, Institutional Review Board for Ethical Standards in Research, a doctoral student must receive permission from any respective agency to conduct a research study in their specialty or field.

2. This request letter is to grant permission to research based on the follow topic:

Comparative Analysis of the USAF F-16 and RAAF F-18 Training Programs

Brief synopsis: I will be conducting an in depth study comparing USAF F-16 and RAAF 18 introductory training policy. I will be exploring how and why specific training policies are developed and implemented and what can be learned and applied to future fighter training policies.

3. If approved, I will request permission from the USAF and RAAF to use unclassified training policy documents as primary data for the comparative analysis. Additionally, I will request to conduct a series of interviews with the following participants: up to ten F-16 and F-18 pilots.

Each interviewee requested has firsthand knowledge of the training programs and interviews are important to my research as it will provide context and first hand perspective to the data collected from the policy documents.

4. All research and interviews completed on the fighter training programs for this dissertation will be UNCLASSIFIED. To ensure classified information will not be disclosed inadvertently, the dissertation proposal and final dissertation will be submitted to the office of the Secretary of the Air Force International Relations (SAF/IA), Washington D.C. and to the Royal Australian Air Force 2OCU commander, Williamtown AB, Australia prior to submission at Walden University.

5. Thank you for your assistance.

1st Ind, AETC/A3ZF

I have reviewed this request in its entirety and recommend approval for Major James D. Smith, student ID 00363046, to complete his research study and dissertation on the USAF F-16 and RAAF F-18 introductory training programs. If you have any questions or concerns, please contact me at phone number or email. Thank you for your assistance.

[redacted]
F-16 Training Program Manager
Comm: 210-652-9634 Email: mark.rightmyer.1@us.af.mil

2nd Ind, AETC Foreign Disclosure Division

I have reviewed this request in its entirety and recommend approval for Major James D. Smith, student ID 00363046, to complete his research study and dissertation on the USAF F-16 and RAAF F-18 introductory training programs. If you have any questions or concerns, please contact me at phone number or email. Thank you for your assistance.

[redacted]
Chief, Foreign Disclosure
Comm: (210) 652-4257 Email: paul.bigelow.1@us.af.mil

Appendix H: Permission to Conduct Research

TO: 2 Operational Conversion Unit Commander, RAAF Williamtown AB, Australia

FROM: Major James D. Smith, Walden University Student ID 00363046

SUBJECT: Permission to Conduct Research on USAF F-16 and RAAF F-18 Introductory Training Program

1. I am an active duty Major in the United States Air Force who is also a doctoral student with Walden University in the PhD Public Policy and Administration program. Per Walden University's Office of Research Integrity and Compliance, Institutional Review Board for Ethical Standards in Research, a doctoral student must receive permission from any respective agency to conduct a research study in their specialty or field.

2. This request letter is to grant permission to research based on the follow topic:

Comparative Analysis of the USAF F-16 and RAAF F-18 Training Programs

Brief synopsis: I will be conducting an in depth study comparing USAF F-16 and RAAF F-18 introductory training policy. I will be exploring how and why specific training policies are developed and implemented and what can be learned and applied to future fighter training policies.

3. If approved, I will request permission from the USAF and RAAF to use unclassified training policy documents as primary data for the comparative analysis. Additionally, I will request to conduct a series of interviews with the following participants: up to ten F-16 and F-18 pilots.

Each interviewee requested has first hand knowledge of the training programs and interviews are important to my research as it will provide context and first hand perspective to the data collected from the policy documents.

4. All research and interviews completed on the fighter training programs for this dissertation will be UNCLASSIFIED. To ensure classified information will not be disclosed inadvertently, the dissertation proposal and final dissertation will be submitted to the office of the Secretary of the Air Force International Relations (SAF/IA), Washington D.C. and to the Royal Australian Air Force 2OCU commander, Williamtown AB, Australia prior to submission at Walden University.

4. Thank you for your assistance.

1st Ind, (2OCU Commander)

I have reviewed this request in its entirety and recommend approval for Major James D. Smith, student ID 00363046, to complete his research study and dissertation on the USAF F-16 and RAAF F-18 introductory training programs.

See attached guidance sheet / talking points.

WGCDR
CO 2OCU
RAAF Base Williamtown,
NSW, Australia

2 May 16

Appendix I: 2OCU CO Talking Points

Sir,

I wanted to start by explaining that my Dissertation is focused as a policy study rather than a training or training philosophy study. I'm intentionally avoiding anything to do with RAAF F-18 system or pilot capabilities. I am not discussing anything concerning current or future adversaries.

The study is unclassified and I have no desire to release the SATG. My game plan is to use the SATG and the F-16 Syllabus to compare each program so I can present policy findings in the dissertation itself. I do not intend to publish my raw data from the research in its entirety. However, I would like to put bits of comparative data into tables and figures to highlight similarities and differences in the programs that will be presented in Chapter 4 and 5 of the dissertation. Where I am highlighting specific differences, if you prefer, I could always write in comparative terms rather than specific numbers. For example the USAF does XX% less conversion sorties than the RAAF as opposed to stating the actual numbers. I have included an example sheet of raw data I have taken from the F-16 syllabus that we can use for our discussion on Monday.

Below I'll just highlight some of the major differences I have noticed in RAAF and USAF training policy and the types of things I am interested in comparing in the study. I would like to use the SATG as a source to support the policy discussion. I'd also like to accomplish a limited number of email interviews with past OCU students, exchange officers, etc. to add some context to what I learn during the comparative process.

USAF and RAAF Differences

1. RAAF Squadron vs. USAF MAJCOM ownership of the syllabus

The SATG is owned by the OCU commander compared with AETC in the USAF. Although the training scales are different I would like to look at the differences in each organization's process. I am using Policy Feedback Theory to explore how current policy influences future policy and I think this a good entry point for this discussion. (ie. OCU can make changes much more quickly than the USAF).

2. Simulator Training

The USAF and RAAF place different emphasis on simulator training and I would like to compare how the simulator is used for training. As far as level of detail I don't really want to go deeper than Conversion, AA, and AS weight of effort. I don't care about BFM vs. DCA or specific proficiency levels. I'm looking at how the RAAF and USAF integrate simulators into their respective training policies. This portion focuses partly on Punctuated Equilibrium Theory, which predicts that punctuated events (i.e. technology changes) can bring about large changes in policy.

3. Course Delivery methods

Lecture, workbook, self-study etc. I'd like to look at the delivery methods because this ties into learning style theory where different instructional delivery methods can impact how well different students absorb information.

4. Emergency Procedure and Instrument training.

Looking at differences in rate of effort and how students learn this material. For example the RAAF emphasizes Boldface and a bit more memorization compared with more in-depth systems academics in the USAF. Also USAF students leave the course with a much more restrictive weather category than RAAF students.

5. Solo vs. Dual training

The RAAF does a lot more dual training. In my opinion this allows instructors to "fill student's bucket" to a higher level per sortie in the RAAF syllabus because there is a safety net in the back seat. My intent is to use the SATG to show the difference and discuss the impacts.

6. Experience levels of students.

Looking at the average experience of a new F-16 vs. F-18 student when they start training. This isn't in the SATG but something I'm interested in.

7. Policies to handle struggling students.

This is also not documented in the SATG but it is discussed at length in the F-16 syllabus. I would like to discuss these types of administrative policies

8. Timelines

Six month F-18 course vs. nine month USAF course. Looking at impacts due to the different timelines.

9. I've also attached my proposed interview questions and am using the questions to explore cultural differences between the USAF and RAAF fighter organizations. I think the interviews will add perspective to the document analysis.

I am happy to accommodate your concerns and am confident there is plenty of room to develop an unclassified study that is relevant from a policy perspective. I look forward to discussing.

Appendix J: Permission to Conduct Research

TO: 56 Operations Group Commander, USAF, Luke AFB, AZ

FROM: Major James D. Smith, Student ID 00363046

SUBJECT: Permission to Conduct Research on USAF F-16 and RAAF F-18 Introductory T
Program

1. I am an active duty Major in the United States Air Force who is also a doctoral student wi
University in the PhD Public Policy and Administration program. Per Walden University's
Research Integrity and Compliance, Institutional Review Board for Ethical Standards in Res
doctoral student must receive permission from any respective agency to conduct a research s
specialty or field.

2. This request letter is to grant permission to research based on the follow topic:

Comparative Analysis of the USAF F-16 and RAAF F-18 Training Programs

Brief synopsis: I will be conducting an in depth study comparing USAF F-16 and RAAF F-
training policy. I will be exploring how and why specific training policies are developed and
and what can be learned and applied to future fighter training policies.

3. If approved, I will request permission from the USAF and RAAF to use UNCLASSIFIED
that is within For Official Use Only (FOUO) training policy documents. Specifically I will
information from the Combined Wingman Syllabus (CWS) as a primary data source. The
UNCLASSIFIED information is focused on training policy content rather than tactical or sy
information. The primary data collected from the CWS and RAAF F-18 Syllabus will serve
focus of the comparative analysis. Although the policy documents as a whole are considere
only publish UNCLASSIFIED information extracted from source documents. Additionally,
to conduct a series of interviews with the following participants: up to ten F-16 and F-18 pil

Each interviewee requested has first hand knowledge of the training programs. Interviews a
my research as it will provide context and first hand perspective to information collected fro
documents.

4. The published dissertation will be UNCLASSIFIED. To ensure classified information is
inadvertently, the dissertation proposal and final dissertation will be submitted to the office
of the Air Force International Relations (SAF/IA), Washington D.C. and to the Royal Austr
2OCU commander, Williamtown AB, Australia prior to publication at Walden University.

4. Thank you for your assistance.

I have reviewed this request and recommend approval for Major James D. Smith, student ID
complete his research study and dissertation on the USAF F-16 and RAAF F-18 introductor
programs.

[redacted]
Commander
Comm: 623-856-5950 Email: 56og.c

Appendix K: Permission to Conduct Research

TO: Royal Australian Air Force F-35 Senior National Representative, Luke AFB Arizona.

FROM: Major James D. Smith, Student ID 00363046

SUBJECT: Permission to Conduct Research on USAF F-16 and RAAF F-18 Introductory Training Program

1. I am an active duty Major in the United States Air Force who is also a doctoral student with Walden University in the PhD Public Policy and Administration program. Per Walden University's Office of Research Integrity and Compliance, Institutional Review Board for Ethical Standards in Research, a doctoral student must receive permission from any respective agency to conduct a research study in their specialty or field.

2. This request letter is to grant permission to research based on the follow topic:

Comparative Analysis of the USAF F-16 and RAAF F-18 Training Programs

Brief synopsis: I will be conducting an in depth study comparing USAF F-16 and RAAF 18 introductory training policy. I will be exploring how and why specific training policies are developed and implemented and what can be learned and applied to future fighter training policies.

3. If approved, I will request permission from the USAF and RAAF to use unclassified training policy documents as primary data for the comparative analysis. Additionally, I will request to conduct a series of interviews with the following participants: up to ten F-16, F-18, and F-35 pilots.

Each interviewee requested has first hand knowledge of the training programs and interviews are important to my research as it will provide context and first hand perspective to the data collected from the policy documents.

4. All research and interviews completed on the fighter training programs for this dissertation will be UNCLASSIFIED. To ensure classified information will not be disclosed inadvertently, the dissertation proposal and final dissertation will be submitted to the office of the Secretary of the Air Force International Relations (SAF/IA), Washington D.C. and to the Royal Australian Air Force 2OCU commander, Williamtown AB, Australia prior to submission at Walden University.

4. Thank you for your assistance.

1st Ind, (ORGANIZATIONAL OFFICE)

I have reviewed this request in its entirety and recommend approval for Major James D. Smith, student ID 00363046, to complete his research study and dissertation on the USAF F-16 and RAAF F-18 introductory training programs.

WGCDR
RAAF F-35 Senior National Representative
Luke AFB Arizona

Appendix L: Permission to Conduct Research

Australian Government
Department of Defence
Defence People Group

Defence People Research - Low Risk Ethics Panel
Directorate of People Intelligence & Research
Defence People Group
Ph: +61(2) 6127 2155
Email: PeopleResearch.Ethics@defence.gov.au

01 May 2017

Lt Col James "Kane" Smith
United States Air Force

Ref:
DPR-LREP 023/17
OBJ fAB5449831

Dear James,

Thank you for submitting your research project **Comparative Analysis of the USAF F-16 and RAAF F-18 Training Programs** for ethical review. I am pleased to advise you that the Defence People Research - Low Risk Ethics Panel has granted **unconditional** ethical approval of Protocol 023/17 research project.

Approval of this project from the Defence People Research - Low Risk Ethics Panel is valid from **01 May 2017** to **30 April 2019** subject to the following conditions being met:

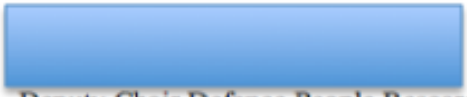
- The Coordinating Principal Investigator will ensure that all preamble, participant information and final report quote the assigned protocol number.
- The Coordinating Principal Investigator will immediately report anything that might warrant review of ethical approval of the project.
- The Coordinating Principal Investigator will notify the Defence People Research - Low Risk Ethics Panel of any event that requires a modification to the protocol or other project documents and submit any required amendments in accordance with the instructions provided by the Panel.
- The Coordinating Principal Investigator will submit any necessary reports related to the safety of research participants.
- The Coordinating Principal Investigator will notify the Defence People Research - Low Risk Ethics Panel when the project is completed at all sites.
- The Coordinating Principal Investigator will notify the Defence People Research - Low Risk Ethics Panel if the project is discontinued at a participating site before the expected completion date, with reasons provided.
- The Coordinating Principal Investigator will notify the Defence People Research - Low Risk Ethics Panel of any plan to extend the duration of the project past the approval period listed above and will submit any associated required documentation.
- The Coordinating Principal Investigator will notify the Defence People Research - Low Risk Ethics Panel of their inability to continue as Coordinating Principal Investigator including the name of and contact information for a replacement.

This project cannot proceed at any site until approval has been obtained from the Commanding Officer (or equivalent) at that site.

Should you have any queries about the Defence People Research - Low Risk Ethics Panel's consideration of your project please contact Beck Smith, Research Officer, Defence People Research - Low Risk Ethics Panel (PeopleResearch.Ethics@defence.gov.au).

The Defence People Research - Low Risk Ethics Panel wishes you every success in your research.

Yours faithfully,



Deputy Chair Defence People Research - Low Risk Ethics Panel
Deputy Director, Directorate of People Intelligence & Research
Department of Defence

This Low Risk Research Ethics Review Panel operates in accordance with the National Health and Medical Research Council's (NHMRC) *National Statement on Ethical Conduct in Human Research (2007).*

Appendix M: Permission to Conduct Research

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS UNITED STATES AIR FORCE
WASHINGTON, DC

3 - MAY 2017

MEMORANDUM FOR WALDEN UNIVERSITY

FROM: AFMSA/SGE-C
Research Oversight and Compliance Division
7700 Arlington Boulevard, Suite 5151
Falls Church VA 22042-5164

SUBJECT: Human Research Protection Official (HRPO) Review of **FSG20170004E**

References: (a) Department of Defense Instruction 3216.02_Air Force Instruction 40-402, 10 September 2014, *Protection of Human Subjects and Adherence to Ethical Standards in Air Force Supported Research*
(b) Department of Defense Instruction 3216.02, 8 November 2011, *Protection of Human Subjects and Adherence to Ethical Standards in DoD-Supported Research*
(c) 32 CFR 219, *Protection of Human Subjects*

In accordance with Reference (a), the HRPO review with consultation from the Surgeon General Human and Animal Research Panel (SGHARP) has been completed. The HRPO concurs with the exempt determination for the following study in accordance with Reference (c) 101(b)(2).

FSG20170004E, "Comparative Analysis of the USAF F-16 and RAAF F-18 Training Programs"

Please ensure this research is conducted in compliance with the References, to include proper maintenance of records as required by the IRB. Refer to the Terms of Air Force HRPO Concurrence (attached) regarding reporting requirements and responsibilities of the Principal Investigator to the HRPO.

Please direct questions to AFMSA/SGE-C at usaf.pentagon.af-sg.mbx.afmsa-sge-c@mail.mil to discuss any substantive change to this activity prior to implementation to ensure it does not impact the determination herein or compliance with the above references.

[redacted]
Director, Research Oversight and Compliance Division

Attachment:
Terms of AF HRPO Concurrence

BREAKING BARRIERS...SINCE 1947

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS UNITED STATES AIR FORCE
WASHINGTON DC

TERMS OF AIR FORCE HUMAN RESEARCH PROTECTION OFFICIAL (HRPO) CONCURRENCE

1. By virtue of the Air Force (AF) support (see definition in DoDI 3216.02_AFI 40-402) provided to the non-Department of Defense (DoD) institution performing the activity identified herein, this activity must comply with all applicable federal, DoD, and AF human research protection requirements. In addition to the requirements identified in conducting non-DoD institution's Federalwide Assurance, compliance with the following laws, regulations, and guidance is required:

- Title 32 Code of Federal Regulations Part 219 (32 CFR 219), Department of Defense Regulations, "Protection of Human Subjects"
- Title 45 Code of Federal Regulations Part 46, (45 CFR 46) Department of Health and Human Services Regulations, "Protection of Human Subjects," Subparts B, C, D, and E as made applicable by DoD Instruction (DoDI) 3216.02
- Title 21 Code of Federal Regulations 50, 56, 312, and 812, Food and Drug Administration (FDA) Regulations
- DoDI 3216.02, "Protection of Human Subjects and Adherence to Ethical Standards in DoD-supported Research"
- Title 10 United States Code Section 980 (10 USC 980), "Limitation on Use of Humans as Experimental Subjects"
- DoDI 3210.7, "Research Integrity and Misconduct"
- DoDI 6200.02, "Application of Food and Drug Administration (FDA) Rules to Department of Defense Force Health Protection Programs"
- DoDI 3216.02_AFI 40-402, "Protection of Human Subjects and Adherence to Ethical Standards in Air Force Supported Research"

2. Below is a select list of requirements from the regulations and guidance listed above. The non-DoD institution should communicate with the supporting AF institution to ensure compliance.

- Ensure all DoD supported activities have DoD Human Research Protection Official (HRPO) review to ensure compliance prior to start
- Conduct initial and continuing research ethics education for personnel who are engaged in the research
- Ensure IRB consideration of scientific merit of new research and any substantive amendments thereto
- Ensure additional protections for military research subjects to minimize undue influence
- Explain to subjects any provisions for medical care for research-related injury
- Report continuing review documentation, unanticipated problems involving risks to subjects or others, serious or continuing non-compliance, adverse events, research-related injury, and suspensions or terminations of research
- Appoint a research monitor, when necessary
- Safeguard for research conducted with international populations
- Protect pregnant women, prisoners, and children
- Comply with DoD limitations on research where consent by legally authorized representatives is proposed
- Comply with DoD limitation on exceptions from informed consent (e.g., 10 USC 980, 45 CFR 46, and 21 CFR 50)
- Comply with limitations on dual compensation for U. S. military personnel

- Follow DoD requirements for additional review for DoD-sponsored survey research or survey research within DoD
- Address and report allegations of non-compliance with human research protections
- Address and report allegations of research misconduct
- Follow procedures for addressing financial and other conflicts of interest
- Prohibit research with prisoners of war (POW)
- Comply with requirements for investigations of Food and Drug Administration regulated products (drugs, devices, and biologics)
- Follow recordkeeping requirements
- Support oversight by the supporting DoD Component (which may include DoD Component review of the research, requests for documentation such as Institutional Review Board (IRB) membership rosters, and site visits)

3. Please contact the supporting AF institution (e.g., via the Program Manager responsible for oversight of the relevant activity) with any questions for the AF HRPO.

Appendix N: Executive Summary

TO: Commanders and Research Participants.

FROM: Lt Col James D. Smith, Student ID 00363046

SUBJECT: Executive Summary of Walden University Dissertation Titled: Comparative Analysis of the USAF F-16 and RAAF F-18 Training Programs

BRIEF SYNOPSIS: I conducted a qualitative multi-case study comparing USAF F-16 and RAAF F-18 introductory training policy. I explored policy feedback, punctuated equilibrium, and learning style theories to better understand how and why specific training policies are developed and implemented.

1. This summary presents the study findings and recommendations.

2. Findings:

- The primary differences between the USAF and RAAF programs were the result of contrasting resource availabilities and cultural differences.
- Policy feedbacks and punctuated events influenced the fighter pilot training policy process.
- Best practices identified throughout the training included well-designed stress application techniques designed to maximize students' learning coupled with servant instructors, and a timely introduction of academic, simulator, and flight training.

3. Recommendations for USAF F-16 Training:

- Reduce academic depth during introductory F-16 training with the intent to better align academic timing to occur within a one-week period of simulator and flight training. Currently, students are often introduced to new material weeks in advance of simulator and flight training, which is difficult for students to focus on the next event considering the extended delays between events.
- Increase flight frequency to consolidate learning. Three to four flights a week would be optimum.
- Reduce F-16 D model requirements in F-16 training to instill single seat mentality and simplify scheduling requirements.
- Delegate syllabus waiver authority to the Operations Group or Squadron Commander
- Conduct a classified study of F-16 fighter pilot training policy.

4. In order to remain at the unclassified level this study focused primarily on policy, culture, and instructional differences and does not address detailed training or tactical content. The recommendations are the authors alone and do not reflect the opinion of the USAF or the RAAF. The study focuses primarily on understanding the policy process and the recommendations in this document are not the main focus of this study. However, fighter pilots are the primary audience of this executive summary. Therefore, I focused on practical applications rather than theoretical content.

5. Questions should be addressed to Lt Col James D. Smith at james.smith.39@us.af.mil