5-2009

An Exploratory Analysis of the Psychological Dimensions of Airline Security and Correlates of Perceived Terrorism Threats: A Study of Active American Airlines Pilots.

Paul Martin Borowsky
East Tennessee State University

An Exploratory Analysis of the Psychological Dimensions of Airline Security and Correlates of Perceived Terrorism Threats: A Study of Active American Airlines Pilots

---

A thesis

presented to

the faculty of the Department of Criminal Justice and Criminology

East Tennessee State University

In partial fulfillment

of the requirements for the degree

Master of Arts in Criminal Justice and Criminology

---

by

Paul M. Borowsky

May 2009

Steven Ellwanger, Ph.D., Chair

Wayne Gillespie, Ph.D.

Paul Kamolnick, Ph.D.

Keywords: Airplane, Pilot, Security, Terrorism, Airline

ABSTRACT

An Exploratory Analysis of the Psychological Dimensions of Airline Security and Correlates of Perceived Terrorism Threats: A Study of Active American Airlines Pilots

by

Paul M. Borowsky

The September 11, 2001, terrorist attack resulted in a myriad of new policies designed to enhance aviation security. These policies ostensibly considered the origins of the exact threat facing the United States. Missing, however, were the inputs from rank and file pilots of the airlines that policy makers were attempting to protect. This exploratory study distributed a 50-question survey designed to measure pilot perceptions of security risk and threats. Univariate descriptives were used to examine the extent to which sample data approximated the population of interest. Factor and reliability analysis were used to document the multidimensionality of the constructs and assess the appropriateness of the linear combination of variables used to construct the scales. Finally, correlation analysis was used to better understand which areas of airline security might be targeted by policymakers to enhance existing structures and practices. Results revealed statistically significant differences in the perceptions of pilot security concerns and the focus of current U.S. aviation security policy.

ACKNOWLEDGMENTS

I would like to thank the following committee members for their hard work and dedication in helping me complete this project: Dr. Paul Kamolnick for helping me shape and refine my ideas into a tangible goal, Dr. Wayne Gillespie for helping me navigate the delicate waters of the IRB, and Dr. Steven Ellwanger for lending his considerable and formidable statistical expertise without which this paper would not have been completed. Special thanks go to Dr. Gregory J. DeLone for being a friend as well as a mentor. Finally, I would like to dedicate this thesis to my mother, Rejeanne, for always supporting and taking pride in my goals as though they were her own, and to my father, Charles, whom I know would have enjoyed the intellectual processes involved in completing this research.

CONTENTS

LIST OF TABLES

LIST OF FIGURES

Figure Page

CHAPTER 1

INTRODUCTION

September 11, 2001, will be remembered as a day of violent and malicious terrorist attacks against U.S. citizens and interests in a nonwar zone. Officially, 2,996 people were confirmed dead or missing. Shortly thereafter, U.S. foreign policy was dramatically redefined as well as political priorities, economic strategies, and U.S. connections with international allies. At an individual level, the unprecedented tragedy may have affected U.S. citizens and their perceptions of the future as well as expectations of daily life. Soon after 9/11 it was clear that Americans were forever changed as a result of the attacks (Peterson & Seligman, 2003, p. 381). America had been dramatically exposed to a form of warfare known as terrorism and, although far from a new concept, it was the first time Americans had been exposed to it on such a large scale. The issue facing Americans now became one of providing for security while preserving individual liberty. More specifically, new policies and strategies would have to be formulated in order to provide a safer, more secure, and more reliable air transportation system.

Following the attacks of 9/11 the United States Congress established the National Commission on Terrorist Attacks upon the United States, more commonly known as the 9/11 Commission. Its purpose was:

> to investigate facts and circumstances relating to the terrorist attacks of September 11, 2001, including those relating to intelligence agencies, law enforcement agencies, diplomacy, immigration issues and border control, the flow of assets to terrorist organizations, commercial aviation, the role of congressional oversight and resource allocations, and other areas deemed relevant by the Commission. (The 9/11 Commission, 2004, p. xv)

The Commission report was designed to determine the location of weak areas, or fault lines, in security policy and practices. It was assembled because "September 11, 2001 was a day of unprecedented shock and suffering in the history of the United States, a traumatic event, therefore giving rise to great anxiety about judgment and the assignment of blame" (The 9/11 Commission, 2004, p. xv). The Commission directly criticized the Federal Aviation Administration, whose staff informed them that is was not their responsibility to tell airlines what to tell pilots regarding security crisis on planes (Young, 2007, p. 35). The FAA did not feel it was their responsibility to warn airlines or pilots of potential terrorist threats.

Many of these policies changed when President George H. W. Bush signed into law the Air Transportation Security Act that was designed to improve the nation's aviation security system. The Act intended to change the way security is performed and administered for the entire transportation industry. The Act contained specific deadlines for its new administrators such as mandating a massive hiring of over 30,000 new screeners to occupy over 400 airports nationwide (Sweet, 2004, p. 43). Clearly screening was a prominent early target of policymakers in the defense of the nation's airlines. Policy makers, however, never consulted with rank and file pilots at American Airlines during any phase of post 9/11 aviation security policy formation.

Airline pilots are charged with the safe operation of multimillion dollar aircraft as well as the lives of potentially hundreds of passengers on each flight. They fly up to 100 hours per month, or 1,000 hours per year, while being subjected to various security processes at major airports around the world. They observe ramp operations and security screening as well as coordinate in-flight security with flight attendants and air marshals. The perceptions and intimate local knowledge these pilots possess could help shape more effective airline security policy;

however, no significant study has been found highlighting this valuable, unexplored area of expertise. Understanding the perceptions of pilots and their observations of aviation security could lead to more effective policy, which in turn could lead to a safer, more effective air transportation system.

The objective of this exploratory study is to quantitatively measure the above mentioned security perceptions of risks and threats that currently challenge post-9/11 aviation security as perceived by pilots of American Airlines. Current U.S. policy has primarily focused on passenger screening as the principal deterrent and last line of defense in keeping terrorists from boarding commercial aircraft. The focus on screening, however, may be to the detriment of other dimensions of airline security. The intimate local knowledge of rank and file pilots of American Airlines may reveal dimensions that have been overlooked by U.S. aviation security policymakers.

CHAPTER 2

REVIEW OF THE LITURATURE

Defining the Enemy

The ancient Chinese warrior Sun Tzu taught his men to know their enemy before going into battle. For if "you know your enemy and know yourself," he wrote, "you need not fear the result of a hundred battles." However, Sun Tzu warned, "If you know yourself but not the enemy, for every victory gained you will also suffer a defeat" (North, 2004, p. 1). The ancient words of Sun Tzu, written over 2,500 years ago, are as relevant now as they were then.

Following the events of 9/11 the nation's airline pilots were asking themselves who or what the enemy was. Just 9 days later President George Bush attempted to answer that question during a speech to the joint session of Congress. "Americans have many questions tonight," he said. "Americans are asking who attacked our country. The evidence we have gathered all points to a collection of loosely affiliated terrorist organizations known as al-Qa'ida." He went on to say that al- Qa'ida practices "a fringe movement that perverts the peaceful teachings of Islam." He further added that the "terrorists' directive commands them to kill Christians and Jews, to kill all Americans and make no distinctions among military and civilians, including women and children" (As cited in Rubin & Rubin, pp. 321-322).

President Bush seemed very cautious to define the enemy as not Islam itself, but as a radical offshoot of the religion that uses and perverts Islam to justify its methods for achieving its goals. To further distance the terrorists from mainstream Islam he added the following:

> I also want to speak tonight directly to Muslims throughout the world. We respect your faith. It's practiced freely by many millions of Americans and by millions more in countries that America counts as friends. Its teachings are good and peaceful, and those

> who commit evil in the name of Allah blaspheme the name of Allah (As cited in Rubin & Rubin, pp. 322-323).

He further added that the

> terrorists are traitors to their own faith, trying, in effect, to hijack Islam itself. The enemy of America is not our many Muslim friends. It is not our many Arab friends. Our enemy is a radical network of terrorists and every government that supports them (As cited in Rubin & Rubin, pp. 322-323).

It is apparent great lengths were taken to define the enemy, and that definition would be used to formulate new policies and strategies to help counteract any future acts of terrorism—especially as it pertained to the commercial air transportation system.

Suicide bombing, however, is not a new phenomenon. It has been observed for well over 25 years, and has emerged as a defining characteristic of modern day terrorism. Since the early 1980s, the use of suicide bombing by terrorists and insurgent groups has grown exponentially. In 2004, suicide bombers carried out 163 attacks, striking targets in Afghanistan, Iraq, Pakistan, Israel, Turkey, and Uzbekistan. The final count for 2005 was approximately 360 suicide bombings causing 3,000 fatalities (Lewis, 2007, p. 223). Furthermore, according to the U.S. Department of State, in 2005, suicide bombings worldwide accounted for 20% of all casualties, despite representing only 3.2% of all terrorist attacks. (As cited in Lewis, 2007)

The attraction of suicide bombings stems from their effectiveness. Judged in terms of lethality and media exposure, suicide bombing is the best way for terrorists to carry out lethal violence. Additionally, suicide attacks are relatively inexpensive, as long as the attacker's life is deemed a reasonable price to pay. For these reasons, suicide bombing has become the weapon of

choice for organizations that wish to level the military playing field between themselves and their better armed enemies. (Lewis, 2007)

On November 27, 2002, the Congress and President created The National Commission on Terrorist Attacks upon the United States. The Commission was made up of 10 bipartisan members with the sole purpose of determining why the nation was unprepared for the attacks, how they happened, and what could be done to prevent any future occurrences (The 9/11 Commission, 2004). The Commission report was thorough in its findings and recommendations, and further defined that:

> Islam is not the enemy. It is not synonymous with terror, nor does Islam teach terror. American and its friends oppose a perversion of Islam, not the great world faith itself. Lives guided by religious faith, including literal beliefs in Holy Scriptures, and common to every religion, and represent no threat to us (The 9/11 Commission, 2004, p.363).

Instead, the commission pointed to a "lack of imagination within the security and policy communities as the most significant failure" (As cited in Lewis, p. 226). One explanation for the United States' vulnerability to suicide hijackings was due to U.S. intelligence's community inability to imagine passenger airliners being used as weapons despite the fact that al-Qa'ida had already made use of suicide bombers for its most visible attacks (Lewis, 2007).

With the findings of the 9/11 Commission report the reorganization of the government to assist U.S. Counterterrorism policy could be further refined. At that point, the enemy had been clearly defined and recommendations were given to prevent any further terrorist acts. On March 16, 2006, President Bush released his second term National Security Strategy (NSS). The NSS explains how the government is "working to protect the American people, advance American interests, enhance global security, and expand global liberty and prosperity" (Bush, 2006, p. 3).

The NSS again reiterates that "while the War on Terror is a battle of ideas, it is not a battle of religions," and that "transnational terrorists confronting us today exploit the proud religion of Islam to serve a violent political vision" (Bush, p. 5).

Terrorism has many historical dimensions not seen in more common crimes. Events occurring decades or even centuries ago can influence events in the present. More recent events such as the invasion of Iraq result in connecting the past to the present in a constant stream of terrorist events intended to serve some wider strategy. Muslim terrorists use this historical perspective to restore their society to the ideal of a past perfect or transform their existing society to meet some timeless ideal (Roach, Ekblom, & Flynn, 2005, p. 9).

Interestingly, terrorists do not perceive themselves as acting criminally. From their point of view, their behavior is as rational as any other. This rationality, however, may exist more at a group rather than individual level, some of whom may be deliberately psychologically conditioned (Roach et al, 2005). Theorists speculate that potential terrorists are conditioned by the following process:

Socialization. Potential terrorists are introduced to the values and attitudes of the existing terror group. Through a process of socialization they begin to take on those values and attitudes.

Moral disengagement. This process reorders the existing moral codes of conventional behavior. It reduces the terrorist's part in any death and destruction psychologically by misrepresenting the harm done and blaming (or dehumanizing) the victims (akin to the process where offenders 'neutralize any feelings of guilt and remorse for their victims).

Attachment. Having achieved socialization and moral disengagement, the individuals becomes psychologically attached to the terrorist group, which now gives meaning to

> their lives (especially where there is a religious overlay). The individual then finds it impossible to leave the group – such withdrawal simply cannot be contemplated (Roach et al., 2005, p. 11).

The importance of knowing your enemy is vital to U.S. interests. A great deal of current U.S. counterterrorism strategy has been formulated based on the threat of rogue Islamist terrorists and not the religion of Islam itself. But what if religion is the root cause of extremism and dysfunctional behavior that clearly permeates modern Middle Eastern culture? Effective policy and strategy is dependent on a clear understanding of who or what the United States is fighting. If Islam is to blame than the question still remains whether or not current U.S. policy is based on an adequate analytical understanding of Islam and Islamist Terrorism. Moreover, have policy makers considered Islam as a contributing factor when creating and implementing strategy?

It is difficult to imagine the current level of Middle Eastern conflict existing today without Islam as the core value system and fundamental identity of the Middle Eastern people. Simply put, without Islam there would be no Islamist Terrorism. Current U.S. policy makers should be intimately familiar where ideological seeds are planted and how they continually influence global terrorism. Without this knowledge a clear understanding of the enemy cannot be ascertained and counterterrorism policy would be detrimentally affected.

A brief historical overview illustrates how fast the enemy goes from a simple group of miscreants to a far more complex group of radical religious fundamentalists whose source of violent ideological philosophies come from the religion of Islam itself. It should be noted that unlike western religion and society, particularly Christianity in America, Islam is an all encompassing way of life. It believes in the absence of separation between any earthly

institutions and the religion itself. Thus, politics, government, law and education are institutions guided and influenced by the teachings of Islam (Rubin & Rubin, 2002).

Modern Islamist terrorist ideology traces its roots to 1920s Egypt with the founding of the Muslim Brotherhood by Hassan al-Banna. The Brotherhood is still in existence today, and finds its doctrines and beliefs in all modern Islamist terrorist organizations. Because of this, it is incumbent on U.S. policy makers to understand the philosophy and teachings of this organization, why it found an audience, and what can be done to moderate it radical and harmful beliefs.

The brotherhood believes Islam "applies to all nations and all people." Furthermore, in order to advance their dogmatic vision of a unified return to the so-called glory days of Islam, they label any government that fails to share their vision as unworthy of leadership. Additionally, they feel it is their responsibility to replace, through force if necessary, those governments (Rubin & Rubin, p. 27). This view is central to all modern Islamist organizations. They see themselves as liberators of sorts and desire to overthrow existing governments and install a pure Islamic state in order to rid themselves of the corruption and western influence that has supposedly hindered their nations from achieving greatness. Once this is complete, the state can exist as it was originally intended by Islam. The Brotherhood believes it is the individual's responsibility to questions any government's policies if they do not live up to the standards of Islam as they interpret them. Al-Banna warned that any government that could not deliver, in short order, would need to be replaced, and this "would inevitably lead to a revolution" (Rubin & Rubin, 2002).

With the Brotherhood the seeds of modern revolution were borne in the name of Islam. The idea of the path for Islam to reclaim its position of dominance and influence that can only be

achieved by a revolutionary return to a pure state is at the center of conflict in the Islamic world. Some believe in moderation, while others support violent revolution to achieve results. It is the latter (found in the teachings and doctrine of the Muslim Brotherhood) that the U.S. is now confronting; and that continues to spread its violent and disruptive ideology throughout the world (Rubin & Rubin, 2002).

Eventually the teachings of Hassan al-Banna influenced an Islamic theorist named Sayyid Qutb, who continued to refine and define the call for radicalism. And like al-Banna, his views are represented today in all Islamist fundamentalist groups. For those who believe in a policy of isolation from Islamic states in order to appease fundamentalists, than consider the words of Qutb, written in 1955:

> Some enemies of Islam may consider it expedient not to take any action against Islam, if Islam leaves them alone in their geographical boundaries…But Islam cannot agree to this unless they submit to its authority by paying jizya [a tax paid to Muslims by non-Muslims], which will be a guarantee that they have opened their doors for Islam and will not put any obstacles in its propagation through the power of the state…. (As cited in Rubin & Rubin, p. 32).

The Brotherhood's teachings have found an audience with similar minded reactionaries, some of whom would have a profound influence in future world events. One of those reactionaries was Ayatolla Ruhollah Khomeini, who in 1942 said the following:

> Those who know nothing of Islam counsel against war. Those [who say this] are witless. Islam says: Kill all the unbelievers just as they would kill you all!...Islam says: Kill them [the non-Muslims], put them to the sword and scatter [their armies]…Islam says: Kill in the service of Allah those who may want to kill you!...Whatever good there is exists

> thanks to the sword and the shadow of the sword. People cannot be made obedient except with the sword! The sword is the key to paradise, which can be opened only for holy warriors! Does all that mean that Islam is a religion that prevents men from waging war? I spit upon those foolish souls who make such a claim (As cited in Rubin & Rubin, p. 29).

Following the overthrow of the existing government, Khomeini became the supreme leader of Iran in 1979 and remained in that post until his death in 1989. He clearly believed that Islam urges all Muslims to seek the illusionary past perfect of Islam, violently if needed. The Iranian revolution of 1979 was a call to reinstitute an Islamic state, one that was willingly accepted by the masses. Islam does not fully separate politics, government, or the rule of law. Religion is politics and politics is religion. To the followers of Islam there is no other way (Rubin & Rubin, 2002).

The Iranian revolution galvanized the radical ideology that other Islamists groups had been seeking. The people of Iran embraced a leader of that radical ideology. For most it was a return to the purity of Islam and a chance to reclaim Islam's rightful place in the world (Rubin & Rubin, 2002).

Was Iran influenced by an individual who perverted Islam for his own personal gains and agendas, much like the modern terrorists have been accused of? Or did the people of Iran willingly follow because they believed in the message as much as the messenger himself? Are the modern terrorists simply following a grotesque perversion of Islam, or are they legitimized by the cultural influences of Islam and its followers? These questions are central to understanding the enemy and shaping anti-terrorism policy. David Zeidan, a religious studies expert, defines Islamist (peaceful and violent) goals as:

> [a] restoration of Islamic glory [that] will be achieved by purifying society from un-Islamic teachings and practices, by a return to Islam's original pure sources (the Quran—God's written revelation through Muhammad, and Hadith, the divinely inspired traditions of the Prophet's sayings and deeds) as the only authority, and by the establishment of an ideal Islamic state modeled on that of the Prophet and his Companions (As cited in Rubin & Rubin, pp 11-12).

Zeidan argues that Islamists are motivated by the teachings of Islam and not on a perverted interpretation of those teachings. Furthermore, he believes they "concentrate their efforts on capturing the state and its centers of powers—either legally within the democratic framework, or violently by revolution or coup d'etat," and that:

> [even though] fundamentalists are a minority in most Muslim societies and states , their insistent and vehement discourse has had much effect on the Muslim world, moving into the vacuum left by the failure of secular regimes, redefining orthodoxy, reconstituting the boundaries of political power relations, limiting the borders of the permissible, resonating in the hearts of the impoverished masses, and appealing to a new strata of literate people with modern technical education (As cited in Rubin & Rubin, pp 11-12).

Zeidan emphasizes that Islamists are not perverting Islam but rather *following* the teachings of Islam. This is in direct contradiction the aforementioned Bush administration's view of whom and what America is fighting in the global war on terror.

It is clear that Islam as a religion, as a complete and all encompassing way of life, can't be ignored when developing air transportation policy to combat modern Islamist terrorism. A nation can kill, capture, or neutralize any number of terrorists, but if the basic value system

(Islam) of a people says to continue fighting against a real or perceived enemy, then it may well continue without end.

One should look no further than the ongoing unrest between Palestine and Israel to see what fundamentalist Islam has done to undermine peace. History shows Israel has not been the primary instigator of violence and has tried on numerous occasions to broker more peaceful relations (CNN.com, 2006). Islam, however, and its well documented disdain for the Jewish State, has continually frustrated any hopes of peace. The Arab world has been publicly calling for the elimination of Israel since its creation in 1947. Indeed, as recently as 2006, Iran officially stated Israel should be "wiped off the map" and that the Holocaust was a "myth" (CNN.com).

Is this hatred a modern day phenomenon? Are the policies of the West to blame for the violence as is popularly believed? It is very likely that a great majority of westerners perceive the conflict between Jews and Arab Muslims is largely to blame on the so called occupation of holy lands by Israelis. This view, however, would be myopic when considering the words of the prophet Muhammad himself:

> Abu Huraira reported Allah's Messenger (may peace be upon him) as saying: 'The last hour would not come unless the Muslims will fight against the Jews and the Muslims would kill them until the Jews would hide themselves behind a stone or a tree and a stone or a tree would say: Muslim, or the servant of Allah, there is a Jew behind me; come and kill him' but the tree Gharqad would not say, for it is the tree of the Jews (*Bukhari,* 4:52:176, 177 and 4:56:791).

Again, the recurring themes of violence can be found at the core of Islam and are still used today by fundamentalists to justify their violent positions.

Any discussion of the modern fundamentalist terrorist would not be complete without examining the role of the martyr, or one who is willing to fight and die for Allah (God). Martyrdom is part of all the great religions of the world, but the role it plays in Islam is a fundamental difference between Islam and all other religions, particularly Christianity and Judaism. In Islam, a martyr is defined as "the word for the confession or profession of faith, indicating that [the] willingness to sacrifice all, even life itself, is the ultimate profession or eternal witness of faith.", and that this "provides Muslims with a model and ideology for protest, resistance and revolutionary change" (Esposito, 2005, p. 14*).*

Without the concept of martyrdom Islamist terrorists may have a more difficult time recruiting willing volunteers to sacrifice their lives for Allah. Martyrdom is firmly solidified in the teachings of Islam, and as such will be very a difficult concept to change or moderate. The prophet Muhammad spoke of martyrdom frequently, and his words, narrated by Abu, are telling:

> The Prophet said, 'The person who participates in (Holy battles) in Allah's cause and nothing compels him to do so except belief in Allah and his Apostles, will be recompensed by Allah either with a reward, or booty (if he survives) or will be admitted to Paradise (if he is killed in the battle as a martyr). Had I not found it difficult for my followers, then I would not remain behind any sariya going for Jihad and I would have loved to be martyred in His cause (*Bukhari, volume 1, book 2, number 35).*

The problem with martyrdom, filled with promises of abundant pleasures and rewards, is that it could supplant the initial rationale for violence, which is the love of Islam and Allah. In other words, dying as a martyr could become more important than actually achieving a strategic result with that death.

On the final evening prior to 9/11 attacks, 19 hijackers were given final instructions in preparation for their "mission." The instructions were believed to be written by Abdul Aziz al-Omari and stated the following:

> Let your breast be filled with gladness, for there is nothing between you and your wedding [with God/paradise] but mere seconds. There will begin a happy and contented life and immortal blessings with the prophets, the true ones and the righteous martyrs. They are the best of companions. We beseech God for his graces. So seek good omens. For the Prophet, May blessings and peace be upon him, used to love divinations about every matter…Then recite the words of God, you are wishing for death before encountering it, then you saw it, and are looking for it. And you wanted it (As cited in McDermott, 2005, Appendix B pxx*).*

Violence, hatred, intolerance, and martyrdom, although found in all religions, appear to be at the forefront of radical Islam. Furthermore, those teachings could be a prime contributor in the recruitment of suicide bombers. Islam looks to be in turmoil, anachronistic, and in desperate need of answers. Islamist fundamentalists ostensibly desire the return to past glory when Islam ruled the Arab world by whatever means necessary, including destruction of life and property. Moreover, it does not matter if potential victims are Muslim, Christian, Jewish, or any other faith, as long as objectives are met

U.S. counterterrorism policy defines the enemy as a small group of disturbed ideologues supporting a doctrinaire interpretation of Islam (Bush, 2006). The problem, however, appears to be farther reaching and more challenging than finding a group of malcontents and arresting them for bad behavior. The problem may be Islam itself, which is intertwined and inseparable from any Muslim state or individual.

Defining terrorists in simplistic terms is one characteristic of the global war on terror. This is either a capitulation to the forces of political correctness or a grave error on the part of current policy makers. The question going forward is what implications do these apparent oversimplifications have for current U.S. counter-terrorism and airline security strategy? Are these objectives sound, or do they require revision? What are the perceived reactions to these policies by the very people who work in the airline transportation environment?

As mentioned previously, the President's National Security Strategy released in March, 2006, outlines the Untied States' plan to combat the global war on terror. While written in broad strokes, it is clear that the strategy is organized, introspective, and realizes the enemy is more than what is being publicly touted. The following is a key excerpt from the National Security Strategy that reveals why Islam, as a religio-political entity, was considered during the formulation of this strategy:

> Our Nation's cause has always been larger than our Nation's defense. We fight, as we always fight, for a just peace—a peace that favors liberty. We will defend the peace against the threats from terrorists and tyrants. We will preserve the peace by building good relations among the great powers. And we will extend the peace by encouraging free and open societies on every continent. In pursuit of our goals, our first imperative is to clarify what we stand for: the United States must defend liberty and justice because these principles are right and true for all people everywhere. No nation owns these aspirations, and no nation is exempt from them. Fathers and mothers in all societies want their children to be educated and to live free from poverty and violence. No people on earth yearn to be oppressed, aspire to servitude, or eagerly await the midnight knock of the secret police (Bush, pp. 2-3).

The principles of liberty and justice, as western civilization understands them, don't appear to exist within Islamic countries. In his speeches President Bush is ostensibly attempting to find common ground by addressing basic human instincts for self determination and freedom. He is not addressing the values of a few, but rather an entire society. Islam would have to be reinterpreted in order to incorporate these values. Bush further illustrates:

> America's constitution has served us well. Many other nations, with different histories and cultures, facing different circumstances, have successfully incorporated these core principles into their own systems of governance. History has not been kind to those nations which ignored or flouted the rights and aspirations of their people (Bush, 2006, p. 3).

Interestingly, President Bush references entire nations and not simply individual groups: "We will disrupt and destroy terrorist organizations by…supporting moderate and modern governments, especially in the Muslim world, to ensure that the conditions and ideologies that promote terrorism, do not find fertile ground in any nation" (Bush, p. 5).

The aforementioned quote is a strong reference to the ideologies of Islam that promote terrorism and anarchy. It is these ideologies that must be addressed in order to help secure the U.S. air transportation system. The National Security Strategy examines many other factors that need attention in order to protect the United States from terrorism. It is a blueprint used in determining a problem and outlining a solution. Of course, like all policy, it is only as good as the agencies empowered to carry out its mandates. The Director of National Intelligence, whose "job is to effectively integrate foreign, military and domestic intelligence in defense of the homeland and of United States interests abroad" (Negroponte, 2006, p. 1), must also have a broad understanding of the threat in order to counter it with effective policy.

A component of the Director's responsibility is to devise and implement a National *Intelligence* Strategy to complement the President's National *Security* Strategy. The strategy's main priority is:

> to inform and warn the President, the Cabinet, the Congress, the Joint Chiefs of Staff and commanders in the field, domestic law enforcement and homeland security authorities in the homeland, and our international allies. In this sense, as President Bush has stated, intelligence is America's first line of defense... (Negroponte, 2006, p. 1).

An objective of the Intelligence Strategy is to "Anticipate developments of strategic concern and identify opportunities as well as vulnerabilities for decision makers." It seeks to accomplish this by promoting "deeper cultural understanding," and "better language proficiency…among personnel at all levels" (Negroponte, 2006, p. 1). These passages indicate the U.S. is not merely looking for a few common criminals. After all, law enforcement authorities didn't need cultural understanding when catching the bombers of the World Trade Center in 1993.

Examples from the 2006 National Security Strategy and National Intelligence Strategy reveal an administration which understands Islam is a contributing factor and must be addressed when formulating effective counter-terrorism strategy. The strategy framers are using language of diplomacy to outline a plan for victory. This language should not be confused with a lack of direction or understanding. It should be viewed as a tool for keeping different nations, religions and cultures on the same "politically correct" page when attempting to define and implement strategy and policy. Without factoring the religion of Islam as a contributor to the cycle of violent ideologues that continue to emerge from Middle Eastern Islamic nations, the United States would severely disadvantage herself from finding effective and lasting solutions to the dangers of Islamist Terrorism.

Historical Perspective

Terrorism is feared and loathed in every nation of the world. It is understandable given the exposure terrorist attacks have been given in the media since 9/11. The seeming randomness of violence and innocent lives targeted, however, lend a great deal to the fear and misunderstanding of terrorism as a political weapon. The fact is, terrorism is a relatively rare event that kills very few people—far fewer than civil wars, traffic accidents, or homicide (Englhart & Kurzman, 2006, p.1958). The social disruptions generated by terrorist attacks and the attention paid to them is responsible for the disproportionate level of concern given to these attacks (Englhart & Kurzman, 2006). This is especially true with the perceptions of passengers and employees of the nation's airlines. Every day millions of passenger's board thousands of flights to hundreds of destinations without any disruption or delay attributed to terrorist activity, yet terrorism remains among the greatest concern of a post 9/11 nation. To place it in proper context, over 1.6 *billion* passengers boarded the world's airlines in 2002, and 1.7 *billion* in 2003. In the United States alone, there were over 675 million passengers in 2002 and over 682 million in 2003 (Bricker, 2005, p. 615). A greater understanding of terrorism is necessary in order to determine how certain groups, particularly airline pilots, perceive the threat of terrorism and their ideas to secure against it.

The word "terrorism" finds its genesis in the Latin *terrere*, which literally means to frighten. The first recorded use of the word is associated with the French Revolution's "Reign of Terror" during the 18th Century. Similarly, the U.S. Department of Defense defines terrorism as the "calculated use of violence or threat of violence to instill fear, intended to coerce or try to intimidate governments or societies in the pursuit of goals that are generally political, religious, or ideological." Historically, terrorism has been designed to instill fear in whole populations by

targeting a small, representative group. However, as the attacks by radical Islamist terrorists on September 11, 2001, have shown, this historical perspective on terrorism may be changing. Instead of waging proportionate attacks designed for maximum effectiveness, modern terrorists now seek to inflict maximum damage and destruction as an end in itself, thus turning terrorism into a war of annihilation (Miller, 2006, p. 127).

Following the attacks of September 11, 2001, the United States was suddenly plunged into a new era of warfare. Although terrorism attacks were not a new concept, it was the first sizable assault by Islamist terrorists to be executed on U.S. soil. Not since the 1941 Japanese attacks on Pearl Harbor have the U.S. had to react to such a threat (Ranstorp, 1996 p. 43). The question continues to be why such behavior and actions exist at all, and which policies can be implemented to counteract that behavior.

Islamist terrorists have almost universally experienced a sense of crisis in their environment, which has led to an increase in disaffected groups formed in response to this problem. The crisis contains failings of social, political and economic dimensions of their environment, which have resulted in a spiritual fragmentation and a radicalization of their society (Ranstorp, 1996). Gaining an understanding of the motivations, issues and concerns of Islamist terrorists may prove to be the most effective tool in countering the effects of such lethal behavior.

The Media and Perceptions

Since the events of 9/11, the word and concept of terrorism have seeped into every facet of America's conscience. The economy, government, media, and, of course, transportation have all been profoundly affected. Consumers in general have all been impacted by terrorist events in the U.S. and other countries of the world. Despite ongoing efforts of the global war on terror, the

number of terror incidents around the world continues to grow in frequency. Given the spread of terrorist organizations, the phenomenon of terrorism has become a social structural condition. Despite the continued permeation of terrorism, our knowledge of it and its implications for policy remain poorly understood (Shrivastava, 2005, p. 63). It is important to understand the perceptions of those who are most at risk in the airline environment, and what are the contributing factors to those perceptions.

The issues going forward include how to integrate the theoretical and practical, which requires insight into the perceptions of those who are affected most from the emerging threat of terrorism. As our society undergoes a radical change in airline security, so too will the perceptions of the threat facing our public transportation system. In the U.S., new levels of social anxiety over terrorism have surfaced since September 11, 2001, most specifically worries over airline security in general (Welch, 2006, p. 94). These anxieties undoubtedly play a large role in shaping existing perceptions of threat by airline pilots.

A day does not pass where the Global War on Terror is not highlighted in some manner, specifically in the media. Understanding how the media chooses to report on terrorist incidents has significant consequences for how the public perceives terrorism. Furthermore, policy makers respond to terrorism and terrorists' attempts to use media to accomplish their objectives (Chemrak & Gruenewald, 2006, p. 431). The public relies heavily on news sources for information about terrorism and its related impacts. The accessibility and frequency of the media have altered how most Americans feel and perceive the threat of terrorism in the post 9/11 world (Chemrak & Gruenewald, 2006).

Terrorism acts such as bombings and hijackings can satisfy multiple objectives for terrorists including the realization of their cause, funding, strengthening resolve, and spreading

fear and revenge. For groups or individuals who believe their concerns are being ignored, terrorism becomes a powerful vehicle of communication to gain access to the world's media (Chemrak & Gruenewald, 2006). "There is no doubt that their [terrorists] deeds are planned and executed with the mass media and their effects on the masses and governmental decision makers in mind" (Chemrak & Gruenewald, p. 433). The American public has been bombarded with highly mediated images of terrorists and terrorism events since September 11, 2001. Perceived threats and heightened security alerts abound in daily media coverage, and political speeches, leading to what may be termed a moral panic (Rothe & Muzzatti, 2004, p. 327).

The concept of moral panic has been used to define social issues for over 30 years. Cohen (1973) was the first to present an inclusive definition of a moral panic. According to Cohen, a moral panic occurs when:

> A condition, episode, person or group of persons emerges to become defined as a threat to societal values or interests; its nature is presented in a stylized and stereotypical fashion by the mass media; the moral barricades are manned by editors, bishops, politicians or other right-thinking people…Sometimes the subject of the panic is quite novel and at other times it is something which has been in existence long enough but suddenly appears in the limelight. Sometimes the panic passes over and is forgotten…at other times it has more serious and long lasting repercussions and might produce such changes as those in legal and social policy or even in the way society conceives itself (Cohen, 1973, p. 9).

It is clear that exposure to the 9/11 attacks was largely felt through the media including both media coverage of the actual attacks and the subsequent weeks of coverage, reviewed in ever widening detail, of the horrific consequences. Additionally, the media repeatedly raised the

prospect of future attacks against the U.S. air transportation system (Marshall et al, p. 305). Unlike most disasters, the specific aspects of 9/11—its scale, unpredictability, novelty as a threat, and implications for future safety, together with media saturation of graphic images and frequent government warnings of future attacks—signaled the potential that there was a significant ongoing threat, with greatly elevated risk for being harmed in additional attacks (Marshall et al., 2001). It is this ongoing media assault that has undoubtedly helped shape the perceptions of risk factors among active airline pilots in the United States.

The media coverage of terrorist attacks, training camps, interviews, or photo shoots became part of the planning and strategy of terrorist groups. It is this exposure that unwittingly makes the media accomplices in the success or failure of a terrorist's goals (Vaisman-Tzachor, 2007, p. 55). Media reporting, in essence, becomes a recruiting partner and instrument in the terrorist act. In essence, the media have become a primary vehicle used in advancing the terrorist message, as well as a primary vehicle for recruiting new terrorists. Ironically, the Unites States investment in the democratic principles of freedom of speech is the vehicle used to advance the cause of many terrorist organizations around the globe (Vaisman-Tzachor, 2007).

Conversely, however, media reporters have been able to gain access to terrorist leader and foot soldiers, their families, training facilities, etc., and provide insights into the minds of the terrorists that few other organizations, if any, can provide. Despite this access, media information about terrorists has been largely excluded from any serious consideration by the intelligence and academic community's thus far (Vaisman-Tzachor, 2007). Clearly, the media have a massive influence, both positive and negative, in advancing or curtailing terrorist activities. This influence is bound to shape and influence the perceptions of security matters among pilots of the nation's air carriers.

The media play an enormous role in determining air transportation risk factors. The problem is whether or not the media contribute to the threat of terrorism in a negative way. Suicide missions are viewed as irrational or misguided acts of uninformed people driven by despair or fanaticism. Even when the media report the possibility that a suicide bomber acts from a real injustice, they still tend to accentuate the theme that grievances never justify violence. The message is that violence expresses hate, which leads to reciprocal violence in destructive escalations of hostilities. Who is actually blamed depends on which news outlet is reporting the violence. Western (especially American) media generally blame the Palestinians and their supporters for the ongoing violence between Arabs and Israelis, whereas non-Western media such as al Jazeera tend to blame Israel and supporters, especially the United States (Turk, 2004, p. 275).

The media employing sympathetic descriptions of terrorists and terrorism is a major issue for counterterrorism policy. Governmental authorities and agencies are predisposed to minimizing the risks of either sympathy for terrorists or public fear of terrorism. As such, the implication for counterterrorism policy is to deny legitimacy to terrorist acts and to discourage the media from granting too public a voice for terrorists and terrorist groups. As such, arguments for and against censoring media coverage of terrorist events, including statements issued by terrorists, are summarized below (Schmid & de Graaf 1982, p. 172). The dilemma for government authorities however, is how to minimize publicity for terrorists without pushing them into increasingly destructive acts (Turk, 2004).

Arguments for censorship:

Terrorists use the media for propaganda, which helps recruit new supporters.

Publicity is a major goal of terrorism.

Detailed reporting of incidents gives potential terrorists suggestions and models for action.

Information broadcasts during an incident can be useful to the terrorists involved.

Media presence can endanger hostages.

Reporting terrorist acts can lead to imitation.

Media reports may panic kidnappers into killing their victims.

People without respect for others' lives should not be enabled to command public attention by using violence.

Describing terrorist's acts might promote sadism in some members of the public.

Reporting terrorist outrages might provoke vigilantism and revenge attacks on the group for whom the terrorists claim to be acting.

Negative news is demoralizing. (Turk, 2004, p. 276).

Arguments against censorship:

Not reporting terrorist atrocities might lead people to less negative judgments of terrorists.

Publicity can be a substitute for violence.

Censorship might force terrorists to raise the level of violence.

Not reporting terrorist events would encourage rumors, which might be worse.

Media presence can help prevent police actions that cause unnecessary casualties among both terrorists and victims.

Censorship enables officials to label any dissidents as terrorists, thus undermining legal safeguards.

Media credibility would decline.

Lack of news might result in a false sense of security, leaving the public unprepared to deal with terrorist attacks.

Lack of awareness would keep the public from understanding the political situation.

Feeling deprived of information might increase public distrust of the authorities.

Terrorists' claims that democracies are not really free would gain credibility. (Turk, 2004, p. 277).

Reaction to 9/11

It appears the attacks of 9/11 and subsequent media coverage of the event have had a dramatic influence on U.S. society. The creation of the Transportation Security Agency (TSA), Department of Homeland Security, and FBI reforms are all examples of 9/11's impact on security policy. There has also been increased emphasis on the building of global partnerships for sharing intelligence and data concerning terrorism. Furthermore, many states have developed, or are developing, fusion centers to increase the exchange of information across government sectors to improve the ability to fight crime and terrorism (McGarrell, Freilich, & Chermak, 2007, p. 143).

The blueprint for this new federal security system was the Homeland Security Bill, which was signed into law by President Bush on November 26, 2002. The bill established the Department of Homeland Security, resulting in the largest federal government reorganization in the U.S. since the creation of the Department of Defense in 1947. Among its goals were to reduce America's vulnerability to terrorism and prevention of further terrorist attacks (Fraher, 2004, p. 584). The Transportation Security Administration (TSA) was created to protect the nation's transportation system and to ensure freedom of movement for people and commerce.

The TSA promptly hired and trained 45,000 federal screeners to fill positions at all 429 of America's commercial airports (Fraher, 2004).

These agencies are supporting the global war on terror and, as such, tend to be front and center in media reports. This is especially true of the TSA, whose duties now include all screening of passengers and baggage at our nation's airports. Since 9/11, hundreds of media reports have described the new stresses and hassles of air travel including long airport security lines and threats of airline hijackings and bombings. Furthermore, media reports have suggested that air travel stresses may lead to overwhelming levels of stress for those who work in the travel industry (Bricker, 2005).

The mystery facing those charged with keeping airports safe in a global era is that of keeping airports as accessible as possible to legitimate travelers and as inaccessible as possible to illegitimate ones. Economic globalization depends on the liberalization of trade and reduction of barriers to the flow of goods and persons (Lyon, 2006, p. 401). The only way to accomplish this is by keeping airports as open and stress free to the traveler as possible.

The balance between civil liberty and national security has always been of paramount importance to Americans. The tautological argument of how liberty can be secured without losing that liberty is a central issue in a post-9/11 world. Unfortunately, the very freedoms and liberties Americans value are often exploited by terrorists. The attacks of 9/11 ushered in a new era of warfare in the form of Islamist terrorism. Unlike historically traditional wars, terrorism presents an array of problematic security issues that previous generations simply did not have to face. Generally speaking, past wars have been fought on foreign soil against well-defined combatants. It was clear who the enemy was and what their objectives were. Present day terrorism, however, uses very different tactics from those of the past.

Screening and Policy

The majority of security measures have been designed to counteract the threat of terrorism domestically as well as internationally. How effective those polices are is debatable on many levels. Policy makers often fail to use the local knowledge of those who possess the most intimate understanding of a given situation. Any large social process will inevitably be far more complex than the structural framework we can devise to understand it (James, 1998, p. 309). Because of these complexities it is vital that local knowledge, and not just that of chosen policy makers, be used when formulating effective strategy and policy. This notion of local familiarity, or mētis, is a Greek concept for comparing the forms of knowledge embedded within local experience with the more general or abstract knowledge deployed by the government and its technical agencies (Scott, 1998, p. 311).

Public policy should be informed by local knowledge combined with those of so called "experts." Rank and file employees of the air transportation system could be a helpful source of knowledge and expertise when formulating security policy. Commercial transportation security policy has clearly focused on passenger screening as the primary source of security. A 2003 Government Accounting Office report stated: "Passenger screening is critical to the security of our nation's aviation system, particularly in the aftermath of the September 11, 2001, terrorist attacks. The Transportation Security Administration (TSA) is tasked with securing all modes of transportation, including the screening of airline passengers. TSA has met numerous requirements in this regard, such as deploying 50,000 federal screeners at over 440 commercial airports nationwide" (Government Accountability Office, 2003, p. 2).

Additionally, a 2007 GAO report observed: "The Transportation Security Agency (TSA) has identified the Transportation Security Officer (TSO) workforce as its most important asset in

securing commercial aviation" (U.S. Government Accountability Office, p. 1). TSOs are responsible for screening passengers and luggage to prevent dangerous items from coming onboard commercial aircraft. As such, they are easily the most visible part of commercial aviation security. The TSA deploys TSOs to the more than 400 commercial airports to monitor passengers as they walk through metal detectors, examine carry on items on X-Ray machines, and conduct more thorough inspections of passengers selected for additional screening (U.S. Government Accountability Office, p. 2).

The impetus for this focus on screening probably had to do with the fact that 19 terrorists made it through screening checkpoints on 9/11 with virtually no effort. Two weeks later, in a joint hearing before congress, representatives of the Committee on Governmental affairs stated that "this congress and this administration has to expeditiously develop a comprehensive plan to ensure the safety of the traveling public, the security of our airports, and the continued viability of the aviation industry. First and foremost I believe the federal government should immediately take responsibility for the screening of passengers and carry on luggage and the control of security checkpoints at our Nation's airports" (Joint Hearing before the Committee on Governmental Affairs, 2001, p. 1). In the same hearing, Senator Joe Lieberman added: "In light of the tragic events of September 11, the adequacy of airport screening procedures if of immediate, paramount, and of very wide concern to the American people and to members of congress" (Joint Hearing before the Committee on Governmental Affairs, 2001, p. 2). The focus on screening continued: "As again has been over and over said in the last two weeks and before by the gentleman sitting before us and others, this screening workforce has been characterized as underpaid, under trained, and under experienced, with turnover rates that sometime exceed 400

percent…training and background checks for these employees is minimal" (Joint Hearing before the Committee on Governmental Affairs, 2001, p. 6).

The focus on screening clearly dominated this hearing: "Last June, GAO reported that screeners missed as many as 20 percent of dangerous objects at screening checkpoint", "what new procedures and technologies can be employed to improve screening," "We do know that as far back as the late 1970's, both the FAA and the airlines characterized the performance or lack of performance of screening personnel as significant and alarming," "The first alternative is one in which the air carrier would continue to be responsible for conducting screening…The second alternative is one in which each airport authority would be responsible for screening…The third alternative is based on a new DOT agency…created to conduct a national screening program….And the fourth alternative is a new quasi-government corporation…created to conduct a national screening program" (Joint Hearing before the Committee on Governmental Affairs, 2001, p. 14).

The Greek concept of mētis, which is broadly understood to represent a wide variety of practical skills and acquired intelligence in responding to a constantly changing human environment, appears to be lacking in the formulation of post 9/11 aviation policy. The aforementioned hearings on security were attended by Senators, Congressmen and Congresswoman, committee members, and various other heads of fields relevant to the matters at hand. Absent was the local knowledge of pilots, flight attendants, and other employee groups of the nation's airlines. Certainly union leadership was consulted later on in the process; however, at American Airlines, no rank and file member has ever been asked for input regarding security policy.

Mētis is a valuable contributor to policy making because the skills required to operate in a commercial aviation environment cannot be taught apart from engaging in the activity itself. The observations and experiences of regular exposure to a particular environment simply cannot be transferred to someone who does not have the same local knowledge (Scott, 1998). Furthermore knowing how and when to apply the local knowledge in a concrete situation is the essence of mētis. The subtleties of application are important precisely because mētis is most valuable in settings that are fluctuating and indeterminate. Such local knowledge is particular and can only be acquired by local practice and experience (Scott, 1998).

Post 9/11 aviation security policy has focused on screening to a large extent. However, even prior to 9/11, the focus was on airport screeners. In an April 2000, Subcommittee on Aviation Hearing, Sen. Kay Bailey Hutchison planned to "introduce legislation that would direct the FAA to improve training requirements for security screeners by September 30th of this year. The FAA should require a minimum of 40 hours of classroom instruction and 40 hours of practical, on the job training before an individual is deemed qualified to provide screening services" (Hutchison, 2000, p 2).

Despite these "improvements" by policy makers to screener qualifications, ineffectiveness continued to plague the system. Congresswoman Barbara Boxer addressed the Committee on Commerce, Science, and Transportation on August 8, 2002: "At the beginning of July, just a month ago, I was shocked to read that checkpoint screeners at airports in Los Angeles and Sacramento were ranked in the bottom 5 airports for high failure rates. The examiners who were doing these tests did not even attempt to hide weapons and the screeners still did not find them" (Boxer, 2002, p. 2). Despite the continuing emphasis on screening within aviation policy, it seems to be marginally better than it was prior to 9/11. According to the International Security

Group, a security consulting company, "significant resources have been allocated since 9/11 to improve aviation security in the United States. The area that has received perhaps the most attention is the Transportation Security Administration's (TSA) pre-departure screening for commercial flights. Yet despite the infusion of resources for this activity, as well as for other on-board and on-site initiatives, progress appears uneven and a number of important security gaps remain" (Wienek, 2005, p. 1).

The focus on screening has become the face of airline security policy. No other post 9/11 change is more visible than that of the screening line. Everything from aftershave lotion to nail clippers is examined when a passenger passes through these checkpoints. The impossible task of screening hundreds of millions of passengers per year continues to be a main focus of policy makers. The debate continues over the effectiveness of screening, and how to make it more effective.

Policy formulation generally occurs in stages starting with identification of a problem (such as the 9/11 screening failures). Next comes agenda setting or focusing the attention of mass media and public officials on specific problems. Policies are then formulated through initiation and development by policy-planning organizations, interest groups, government bureaucracies, the President, and Congress. Then next phase is legitimating of policies by interest groups, the President, and Congress. Implementation of policies is carried out largely by executive government agencies. Finally, the policies are evaluated by government agencies, outside consultants, the media, and the public (Dye, 1998, p. 317).

The aforementioned overview is an obvious oversimplification of the complexities of governmental policy-making; however, it does illustrate how local knowledge, or mētis, is often not considered when formulating policy. The formulation phase of policy making is supposed to

consider the inputs of various organizations and interest groups but often times fail in that endeavor. The result is a failure to consider the local knowledge and inputs from the very individuals policymakers are purported to protect. Consider that current aviation security policy completely failed to consult the rank and file pilots of the world's largest airline, even though they are the most affected and suffer the consequences of any breach of security. The bias is unfortunate, however, because the individual does offer a unique viewpoint and substantial local knowledge of a given situation. This apathy leads to the observation that individual participation in policymaking is often simply overlooked (Anderson, 1994, p. 70).

Numerous factors clearly contribute to policymaking, which in turn affects perceptions of employees, passengers and mangers of the nation's airlines. A greater understanding of terrorism and its causes, goals, and impact will further influence and shape attitudes and policies on how best to combat this continuing threat. Anxiety over the attacks of 9/11 clearly remains high. How do the nation's pilots perceive the threat of terrorism? Should they be consulted on their opinions about security related matters? If they are responsible for the safety of the aircraft then they should observe a great deal of security issues. Where are the weak points? How have the media, government policy, and airline policy affected perceptions? Moreover, do the pilots feel safe? Are there significant, measurable differences among pilots as it pertains to age, sex, crew base, political affiliation, or assigned type of aircraft? These and other questions are what this researcher attempted to discover. In such findings may be useful in the formulation of future policies.

CHAPTER 3

METHODOLOGY

The purpose of this study was to explore the potential various dimensions of airline security after 9/11 as perceived by pilots employed by American Airlines. These dimensions were measured by distributing a 50-question survey that was statistically analyzed using factor analysis and correlation. The data were used to reveal perceptions and observations of security-related matters from current American Airline pilots. It was hypothesized that American Airline pilots would have a different perception of threats to air security from what is more commonly propagated by current U.S. policy.

Participants

The population used for the study was all currently employed pilots of American Airlines, as obtained via the Allied Pilots Association (APA) seniority list. The APA is the collective bargaining union that represents all pilots who are employed by American Airlines. The seniority list is rank ordered from the most senior pilot (employed with the company for the longest period of time), to most junior (employed for the shortest period of time). The seniority list only changes in the event of retirement, death, resignation or hiring of an existing or future pilot. At the time of survey dissemination, there were 8,137 pilots on the seniority list.

The survey was designed to be taken by pilots who were currently employed by American Airlines. The decision was made to make the survey available online via the Allied Pilots Association website (www.alliedpilots.org). The union has a variety of functions and committees that respond to the various needs of the membership. One of those is the safety and security committee, which was contacted via telephone to arrange permission for the survey to

be placed on the union website. The union frequently conducts and distributes various surveys to its members using internal software and personnel.

Permission was granted after the union president and board of directors were made aware of the reasons and content of the survey. The safety and security committee then placed a hard copy of the survey into electronic format and placed it onto the APA website. An e-mail "blast" was then sent out to all currently employed pilots informing them of the survey and its location on the website. The survey remained on the website for 10 days in which 658 responses were registered for a response rate of 8.08%.

Data Collection Instrument

The data collection instrument in this study was an on-line questionnaire consisting of 50 questions divided into three parts: a demographics section that included questions on age, experience, and education; a section concerning airline security including questions on airport perimeter security, ramp security, and flight-deck security. The final section consisted of questions designed to measure actual threat perceptions such as likelihoods of various breaches of air security.

Data Analysis

Sample Characteristics

Univariate descriptives of the sample characteristics were analyzed for the following variables: gender, crew base assigned, type of aircraft flown, international or domestic routes flown, position assigned in the flight deck, years at American Airlines, previous military experience, and political ideology. Gender was coded such that male = 1 and female 0. Crew base describes the originating location of the crew member that is largely determined by individual preference and organizational need. The following values were used to denote the 9

crew bases located around the nation: Boston = 1, Washington DC = 2, Dallas = 3, Los Angeles = 4, Miami, New York = 5, Miami = 6, Chicago = 7, San Francisco = 8, and Saint Louis = 9.

Aircraft category was also considered to be an important variable for consideration and was coded as such: widebody = 1 (more than one aisle and the 757) or a narrowbody = 0, which as only one aisle. Whether the pilots flew domestic or international routes was coded as such international = 1 or domestic routing = 0, again based on needs of the company and seniority preferences. Seniority and personal preference also determine whether a pilot is assigned as the captain = 1 or first officer = 2. The distinction between captain and first officer is important because the captain is ultimately responsible for the safe operation of the aircraft from the moment the aircraft departs until it arrives at its destination. The first officer does not experience the same level of responsibility as is imposed on the captain. The length of service for pilots at American Airlines was measured in years. Finally, political ideology was included with the following categories: very conservative = 1, conservative = 2, moderate = 3, liberal = 4 very liberal = 5, and other = 6.

The results of univariate analyses indicate that the sample was predominately male (96.6%) and occupied the rank of first officer (53.3%). Respondents ranged in age from 33 years old to 62 years, with a mean of 48.8. The percentage of pilots who flew domestic routes was 54.8%, while 68.0% reported previous military experience. Additionally, the mean length of service at American Airlines was 16.79 years, and 93.4% of respondents reported completing at least a 4-year college degree. Finally, 62.3% of respondents listed their political ideology as "conservative" to "very conservative."

The majority of respondents reported Dallas Fort Worth (26.8%) as their home base and reported an aircraft type of wide body (50.9%) (See Table 1). Of the type of routes flown, international or domestic, 55.3% reported flying domestic routes only.

Table 1

Univariate Sample Descriptives – Part A

	Age	Gender	Crew Base	Aircraft Type	Route Type
Valid	638	638	639	633	635
Missing	2	2	1	7	5
Mean	48.816	.97	4.98	.51	.45
Median	49.000	1.00	5.00	1.00	.00
Mode	48.00	1	3	1	0
Std. Deviation	5.9390	.183	2.233	.500	.498
Skewness	-.215	-5.115	.341	-.035	.213
Std. Error of Skewness	.097	.097	.097	.097	.097
Range	29.00	1	9	1	1

Table 2

Univariate Sample Descriptives – Part B

	Military Experience	Years at American Airlines	Highest Level of Education Completed	Political Ideology
Valid	635	628	639	634
Missing	5	12	4	6
Mean	.68	16.790	3.18	2.38
Median	1.00	17.00	3.00	2.00
Mode	1	17.00	3	2
Std. Deviation	.467	6.71446	.601	.965
Skewness	-.775	-.187	-.653	1.200
Std. Error of Skewness	.097	.098	.109	.097
Range	1	33.25	3	5

Scale Development Perceived Risk

Using SPSS 15.0, responses to the 27 questions were subjected to a Principal Axis factor analysis with an oblique rotation. Principal axis extraction was selected to reduce the probability of capitalizing on errors in measurement typically enjoyed by the alternative method—Principal Components analysis. To determine the appropriate number of factors the eigenvalues, scree plot, and factor loadings were all analyzed.

The results of the Principal Axis factor analysis suggested the existence of seven unique factors (using the eignvalues greater than 1 rule) (Gutman, 1954) that explained 67.02% of the variance in the unrotated solution. Finally, to determine if seven factors was the most appropriate factor solution, the salient variable rule was used. Here the threshold of practical significance was $\geq$ .30. That is, in order for a factor to be considered valid for extraction it must possess at least three items with factor loadings $\geq$ .30 (unless there are two items with factor loadings $\geq$ .70) and are capable of being named. (Nunnally & Bernstein, 1994) (See Appendix A).

Factor 1 had 6 items with loadings $\geq$ .30. Items 35 (Unattended aircraft are secured sufficiently to prevent unauthorized entry), 32 (Aircraft cargo doors are secure when the aircraft is left unattended), 18 (Unattended aircraft are adequately secured), 26 (Ramp worker entry points employ adequate screening procedures), 22 (Ramp workers are effectively screened prior to entering the ramp), and 29 (Ramp personnel follow security challenge procedures when credentials aren't displayed). As a result, Factor 1 was subsequently labeled "ramp security."

Factor 2 had 5 items considered to be practically significant. Items 20 (The flight deck is adequately secured from unauthorized access), 24 (Current policies regarding aircrew flight deck entry and exit are sufficient to prevent unauthorized access), 16 (I am confident that no unauthorized individuals can enter the flight deck), 12 (Flight deck doors are adequately

reinforced to prevent unauthorized entry), and 21 (There are a sufficient number of Air Marshal's to deter in-flight terrorist attacks). Factor two was subsequently labeled as "Flight deck security."

Six items had factor loading $\geq$ .30 on Factor 3. Items 15 (TSA screeners are adequately trained to identify individuals who pose a threat to aircraft security), 11 (TSA screeners who do not perform adequately will be disciplined), 14 (deleted due to cross loading with factor 1), 19 (TSA screening checkpoints are effective in identifying items that my be used to compromise aircraft security), 27 (The TSA adequately screens all baggage), and question 13 (deleted due to cross loading with Factor 2). Factor 3 was subsequently labeled as "passenger and luggage screening."

Factor 4 had four items considered to be practically significant. Item 34 (Flight Attendants actively look for suspicious behavior), 31 (Passengers are likely to intervene in threats to aircraft security), 28 (Passengers actively look for suspicious behavior), and item 37 (Flight Attendants actively look for contraband that may be used to compromise in-flight security). Factor 4 was subsequently identified as "coproduction of in-flight safety."

Factor 5 had 2 questions with correlation values of .30 or higher. Normally, three or more indicators should be used for legitimacy. In the case of factor 5, two were used because the values were greater than .70 (.864 and .760). The indicators are: question 17 (Air Marshals are adequately trained to deal with threats to aircraft security), and question 25 (I feel confident of an Air Marshal's ability to handle a terrorist event in flight). Factor 5 was subsequently identified as "air marshal protection."

Factor 6 (4.292 total variance explained) had two questions with loadings $\geq$ .70. Given the magnitude of these loadings, 2 items are considered to sufficient to constitute a legitimate

factor (Nunnally & Bernstein, 1994). Items 36 (Individuals acting nervous are more carefully screened than those who appear calm) and 33 (Individuals displaying suspicious behavior receive increased screening). Factor 6 was subsequently identified as "passenger profiling" (See Appendix A—Item by Factor Loadings)

Scale Development of Perceived Threat

Using the data analytic techniques described above, the 13 potential questions measuring pilots' perceived risk were subjected to factor analysis. The results suggested that three factors appropriately represented the factor solution and explained 61.86% of the variance in the unrotated factor solution. Factor 1 possessed 7 salient variables. Items 50 (Terrorists will attempt to compromise aircraft security by securing positions as legitimate airline employees), 48 (Terrorists will target airport perimeters to compromise aircraft security), 49 (Terrorists will likely corrupt airline ground personnel into carrying out their directives), 40 (Terrorists will likely penetrate an airport perimeter in order to carry out a terror event sometime in the near future), 41 (I believe a missile attack against a U.S. commercial aircraft will happen sometime in the near future), 47 (Terrorists will pose as flight personnel to gain access to aircraft in the near future), and 42 (I believe there will be another terrorist attack onboard a U.S. commercial aircraft sometime in the next five years. Although salient, item 44 was eliminated due to its cross-loading with factor 2. Factor 1 was subsequently identified as "ground security breach."

Factor 2 had two variables possessing practical significance. Items 38 (Weapons will likely be brought through security checkpoints in the future) and 39 (Contraband that could be used to compromise aircraft security passes through screening checkpoints). Question 44 was eliminated due to cross-loading with factor 1. Factor 2 was subsequently identified as "screening breach." Similarly, Factor 3 (8.617 total variance explained) had only two items possessing

practical significance. Items 45 (Terrorists will gain control over an in-flight aircraft in the near future) and 46 (Terrorists will find a way to gain access to the flight-deck, while in-flight, sometime in the near future). Factor 3 was subsequently identified as "in-flight takeover" (See Appendix B—Item by Factor Loadings).

Reliability Analysis of Threat and Risk Perceptions

Cronbach's alpha is an index of reliability associated with the variation accounted for by the true score of an underlying construct. A construct is the hypothetical variable that is being measured (Hatcher, 1994). Coefficient Alpha ranges in value from 0 to 1—where a high value represents a reliable scale—and may be used to describe the reliability of factors extracted from multipoint formatted questionnaires or scales (i.e., rating scale: 1 = disagree, 10 = agree. Nunnally (1978) has indicated 0.7 to be an acceptable reliability coefficient in the early stages of prediction or construct validation.

A reliability analysis of each of the factors suggests that the reliability for each of the scales is sufficient for prediction purposes and fairly consistent with the solutions derived from the factor analyses. To be sure, initial reliability analysis of Factor 1 (Ramp Security) with the 6 items suggested by the factor analysis yielded a coefficient $\alpha = .886$. The results suggested removing item 29. The subsequent coefficient $\alpha = .897$ for the scale consisting of the remaining five items. Similarly, the initial coefficient α reported for the proposed 5 items constituting factor Flight Deck Security was .865. The analysis suggested removing item 21 (There are a sufficient number of Air Marshals to deter in-flight terrorist attacks). The final scale consisting of four items achieved $\alpha = .897$. The reliability analysis for the remaining four factors—Passenger and Luggage Screening, Coproduction of In-Flight Safety, Air Marshal Protection, Passenger Profiling—all achieved acceptable α coefficients of .751, .756, .810, and .819, respectively,

using the results suggested by the factor analysis. Finally, reliability analysis for the Perceived Threat scales—Ground Breach, Screening Breach, and In-Flight Attack—all reported acceptable levels of α (i.e., .853, .831, .926, respectively)

CHAPTER 4

RESULTS

The primary purpose of this exploratory study was to understand the perceptions of threats and risks to aviation as observed by American Airlines pilots. Following the events of 9/11, the United States dramatically transformed security policy to combat future terror events. This researcher sought to document the perceived risk and potential threats facing airline security among those possessing intimate and local knowledge of existing practices and conditions. More specifically, this study tapped the perceptions of pilots not only to better understand the potentially complex dimensions constituting airline security but to examine the extent to which current practices and policies square with the risk and threat perceptions of those possessing unique local knowledge.

To this end, a tripartite analytic approach was used. First, univariate descriptives were used to examine the extent to which the sample data approximate the population of interest. Factor and reliability analysis was then used to document the multidimensionality of the constructs and assess the appropriateness of the linear combination of variables used to construct the scales. Finally, correlation analysis was used to better understand which areas of airline security might be targeted by policymakers to enhance existing structures and practices.

Interpretation of Pilot's Perceived Risk

The results of the factor analysis indicate that perceived airline security risk consists of several factors. Using the eigenvalues, scree plot, and salient variable rules, the solution deemed most appropriate consists of 6 factors that explained 67.02% of the variance in the unrotated solution. The eigenvalues for the six factors ranged from 8.650 to 1.159. Factor 1, which was subsequently identified as "ramp security," had the greatest eigenvalue (8.650). This suggests

that ramp security is the most salient dimension constituting airline security among pilots at American Airlines. In fact, the total variance explained by this single factor was 32.039% (See Appendix A—Perceived Risk Factor Analysis)

The eigenvalue, which represents the variance explained of each of the factors, is only one way by which pilot perceptions regarding ramp security can be interpreted. The eigenvalues and variance explained only reflect the salience of the perceived factor relative to others. Another method of understanding this and other dimensions is to assess the grand mean of the scale by comparing it to the anchors employed within the scale and by comparing it to the grand mean(s) for the other dimensions. Computation of the means for each of the items constituting this scale indicate the item means ranged from 2.23 to 3.60 for the 6 items, with a grand mean of 2.91. When comparing this to the scale used in the survey with 1 being negative (strongly disagree) and 10 being positive (strongly agree), a grand mean of 2.91 suggests that pilots don't perceive ramp security to be adequate (See Table E1—Ramp Security Means).

Using the same analytic strategy as above, "flight-deck security" was determined to be the second most prominent perceived airline security factor among this group of pilots which explained 10.528% of the variance in the unrotated solution. Computation of the means (See Appendix F—Flight-Deck Security Means) revealed the item means ranged from 3.3742 to 5.3890 with a grand mean of 4.266. This suggests that pilots perceive flight deck security to be only slightly better than ramp security.

It is clear that ramp safety and flight deck security are the two most prominent factors constituting perceived airline security risk among pilots at American Airlines. More importantly, these pilots perceived these two dimensions as being inadequate to protect against future threats. An examination of the perceived adequacy of the remaining factors is also revealing. Passenger

and luggage screening item means ranged from 3.033 to 4.34. The grand means was 3.46. This suggests that pilots perceive ramp security, flight deck security, and passenger and luggage screening to be inadequate.

The opposite is true for coproduction of safety, air marshal protection, and passenger profiling. In fact, the mean of items for the coproduction of safety ranged from 5.44 to 7.44 with a grand mean of 6.42, suggesting that pilots perceive this dimension of airline security to be adequate. Finally the grand mean for air marshal protection and passenger profiling were 7.64 and 5.05, respectively. The results of this analysis suggest that of the 6 perceived risk factors constituting airline security, this group of pilots only perceived the coproduction of safety on flights and air marshal protection to be adequate, while perceptions regarding the remaining four dimensions were that of inadequacy.

Interpretation of Pilots' Perceived Threat

The results of the analysis of perceived risk among pilots not only revealed the multidimensionality of the construct. In fact, perceived threat, as revealed by the factor analysis, suggests that it consists of ground security breach, screening breach, and in-flight takeover which explained 61.86% of the total variance in the unrotated solution. With respect to which dimension of perceived threat was most salient among the pilots, it was ground security breach as evidenced by an eigenvalue of 5.27, followed by screening breach and in-flight takeover.

With respect to the perceived likelihood of threats occurring, the threat perceived to be most likely was a screening breach. In fact, the grand mean for this factor was 7.57 suggesting that these pilots agree with the prospect of future screening breaches. What is more, these pilots also agree with the possibility of a future ground security breach with a grand mean of 7.32.

Finally, these pilots are largely undecided with respect to the possibility of a future in-flight attack as revealed with a grand mean of 5.36.

Correlation Analysis

A Pearson's correlation coefficient was analyzed for each factor in the scales generated for this study. The correlations were then formed into a correlation matrix (See Table 3). The Pearson *r* coefficient, which can range from –1 to +1, shows the linear relationship between two variables. A negative value indicates a negative relationship (i.e., as one variable increases the other variable decreases), while a positive value represents a positive linear relationship (i.e., as one variable increases the other variable increases as well). A Pearson *r* value of zero indicates no linear relationship between the two variables. Further, by squaring Pearson's r, we can determine the proportion of variance shared by the two variables.

Of the 3 risk factors identified by Principal Axis factor analysis (Ground security breach, screening breach and in-flight takeover) in-flight takeover was evaluated to be the most meaningful dependent variable for interpretation. First, Zero-order correlations were obtained between all demographic and perceived risk variables. The only variable sharing a significant linear relationship with one's perceived risk of an in-flight takeover was gender ($p \leq .01$). The results suggest that females are more likely to perceive a higher risk of an in-flight attack than males. The strength of that relationship for all intents of purpose is weak ($r = -.115$). Neither route (domestic vs. international) nor aircraft type (wide vs. narrow bodied) shared a significant linear relationship. This is surprising because wide bodied aircraft were deliberately targeted by the terrorists on 9/11 for their larger fuel capacity. What is more important, airport security abroad differs drastically from one country to another and a defining characteristic of terrorists groups is the ethnic delineation separating them from "Americans." The increased proportion of

ethnic travels on flights originating from other countries would seem to theoretically increase risk perceptions.

Given this paucity of significant predictors of perceived risk of an in-flight takeover, correlation analysis was then used to examine the degree of the linear relationship between the six risk dimensions documented in this study. Not surprisingly, each of the six factors shared a statistically and substantively strong linear relationship with an individual's perceived risk of an in-flight takeover to varying degrees. In other words, these six dimensions of airline security went much further in predicting perceived threat than did any of the demographic variables previously analyzed with considerable variability across the range of coefficients. The correlation coefficient obtained between ramp security and in-flight takeover was r =-.274. This suggests the strength between the two is modest and that individuals who perceive inadequate levels of ramp security are more likely to perceive a risk of an in-flight takeover. The same is true of flight-deck security, which had the strongest correlation coefficient (r = -.482). Interestingly, passenger and luggage screening and coproduction of in-flight safety had near identical coefficients r = -.228 and r = -.210, respectively.

This is somewhat surprising given that the most attention by policymakers to increase airline security has focused on passenger and luggage screening while this other important dimension—and less costly option—has received scant attention. This suggests that the participants of this study felt that despite huge fiscal and human investment in screening passenger and luggage, it is only slightly more effective than flight attendants and passengers working together to identify and thwart any in-flight terror events. Air marshal and passenger profiling were also statistically ($p \leq .01$) and substantively significant where r = .157 and r = -.170, respectively, and in the expected direction.

Table 3

Correlations:

Variable	In-Flight Takeover
In-Flight Takeover	1
Age	-.009
Gender	-.115(**)
Aircraft Type	.034
Route Type	.063
Rank	.003
Military Experience	-.092*
Years at AA	.048
Highest Level of Education	-.031
Political Ideology	-.033
Ramp Security	-.274(**)
Flight Deck Security	-.482(**)
Passenger and Luggage Screening	-.228(**)
Co-production of In-flight Safety	-.210(**)
Air Marshal Protection	-.157(**)
Passenger Profiling	-.170(**)

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Partial Correlation

Given that some of the previously identified demographic variables (i.e., gender, military experience, type of aircraft, and route) either theoretically or empirically shared a significant linear relationship, partial correlation analysis was used to obtain fourth order correlation coefficient (i.e., partialling the influence of gender, route type, aircraft type, and military experience) to control for the potential confounding effects of these variables. The partial correlation matrix revealed a slight change in the coefficient for Ramp Security from r = -.274 to r = -.268, flight-deck security from r = -.482 to r = -.466**,** passenger and luggage screening from -.228 to -.225, and coproduction of in-flight safety remained the same where r = -.210. (See Table 4)

Table 4

Partial Correlations:

	IFT	RS	FDS	PLS	CIS	AMP	PP
IFT	----	-.268	-.466	-.225	-.210	-.130	-.164
RS	**-.268**	----	.553	.602	.181	.099	.278
FDS	**-.466**	.553	----	.486	.262	.261	.255
PLS	**-.225**	.602	.486	----	.257	.232	.424
CIS	**-.210**	.181	.262	.257	----	.337	.385
AMP	-.130	.099	.261	.232	.337	----	.238
PP	-.164	.278	.255	.424	.385	.238	----

Control Variables are: gender, route type, aircraft type, and military experience.

Note. IFT = in-flight takeover, RS = ramp security, FDS = flight deck security, PLS = passenger and luggage screening, CIS = coproduction of in flight safety, AMP = air marshal protection, PP = passenger profiling.

CHAPTER 5

DISCUSSION

The primary purpose of this exploratory study was to develop a reliable and valid scale by which perceptions of airline pilots can be measured against existing as well as new aviation security policies as they are implemented. Defining the threat of terrorism, discussing a theoretical cause of terrorism, the media's impact on individuals' perceptions, and existing emphasis on aviation security policy were all reviewed to add perspective and focus to the threat facing currently employed American Airline pilots. The researcher disseminated a self-report questionnaire designed to create a valid scale to measure risk and threat factors as perceived by rank and file pilots of American Airlines. In additions, demographic variables that could potentially have an influence on perceptions were included in the analysis.

Methodology

The current study used a self-report questionnaire distributed to the entire population of currently employed American Airline pilots. The researcher created scales for perceived threat and perceived risk factors using Principle Axis factor analysis. The researcher identified six risk threat factors and three perceived threat factors for further analysis and interpretation. Correlation and partial correlation analysis were used to further refine and interpret the results of the newly developed perceived threat and risk factor scales.

Findings

Perceived Risk

Scale development using Principle Axis factor analysis resulted in six principle risk factors identified as: 1. Ramp Security, 2. Flight Deck Security, 3. Passenger and Luggage Screening, 4. Coproduction of In-Flight Safety, 5. Air Marshal Protection and 6. Passenger

Profiling. Of these six factors, ramp security was identified as the most salient risk perceived by pilots with an explained variance of 32.039%. Ramp security includes any employee who works on or around the aircraft while it is at the gate including maintainers, baggage handlers, cleaning crews, and caterers. Interestingly, none of these groups are made to proceed through traditional screening checkpoints even though pilots are required to. This may be part of the reason pilots perceive ramp security to be so high a risk.

To further interpret these risk factors the grand mean of each of the six factors was analyzed. Ramp Security had a grand mean of 2.91 which, when interpreted against the survey scale of 1-10 with a 1 being negative and a 10 being positive, illustrated that pilots perceive ramp security to be highly inadequate. The same is true of flight deck security (10.528 % total variance), which was the second most salient factor identified. Flight deck security includes the flight deck door itself as well as procedures used for in-flight opening and closing of the door (pilot may have to leave the flight deck during flight for physiological needs and flight attendants open it to pass food and drinks to the pilots) Flight deck security had a grand mean of 4.266, which is still in the "negative" range of the scales used, meaning pilots still viewed the security of the flight deck to still be inadequate. Of the six risk factors, ramp security and flight deck security were the two most prominent risk factors identified as inadequate to protect against future threats. Passenger and luggage screening, which includes the security checkpoint so familiar to air travelers in a post-9/11 world, had a grand mean of 3.46 revealing a very negative impression of adequacy among pilots to go along with ramp security and flight deck security.

Perhaps more revealing were the three remaining risk factors of coproduction of in-flight safety, air marshal protection and passenger profiling. Coproduction of in-flight safety, which accounts for the combined actions of flight attendants and passengers in dealing with a threat,

had a grand mean of 6.42 suggesting a perception of adequacy. This is not surprising when recalling the failed 9/11hijacking that crashed into a field in Pennsylvania. It was the combined efforts of flight attendants and passengers that ultimately thwarted the terrorist's intentions even though it was not a "formal" security tactic. That "success" may well be why pilots view the coproduction of in-flight safety as positive or adequate. Along that same logic, it stands to reason that air marshal protection (grand mean of 7.64) would be perceived as highly adequate as well. Air marshal manning numbers and flights assigned are kept secret for obvious security reasons; however, pilots feel having them onboard (or the threat of having them onboard) would contribute to lessening the risk of a terrorist incident. Profiling, which involves identifying potential threats based solely on race, sex, or religion, had a grand mean of 5.05, revealing a neutral or undecided attitude among pilots. That result is revealing from a sociological perspective because those who are most at risk from terrorists don't necessarily feel profiling would be effective, despite the fact that all 19 hijackers on 9/11 were men of Middle Eastern descent.

Of the six risk factors identified only coproduction of in-flight safety and air marshal protection were viewed as adequate. The remaining four were viewed as inadequate, including flight-deck security. Interestingly the flight deck doors of all airliners were upgrades in the months and years that followed the attacks of 9/11. All of the time and money spent on those upgrades have failed to assuage the concerns of pilots concerning an in-flight cockpit breach. This is probably because the door is still opened and closed periodically during flight. Perhaps most disconcerting is the low confidence level pilots have with passenger and luggage screening. No other post-9/11 security change is as evident to the traveling public as passenger screening. A total of 4.7 *billion* dollars (Government Accountability Office, 2008, p. 5) were spent during

fiscal year 2007 directly on aviation security matters of the Transportation Security Agency, whose main purpose is to screen all passengers and luggage for contraband that could be used in a terrorist event. Despite this allocated money and man power, pilots still have exceedingly low confidence in the ability of the TSA to do their job effectively. Additionally, despite this focus on screening, pilots still view ramp security and not passenger screening to be the most salient issue facing aviation security. This is not surprising considering ramp workers do not even undergo the same screening that pilots and passengers do, even though that screening has been deemed inadequate by this study. That begs the question: If ramp workers are not receiving even cursory screening, then how safe can the ramp be? The results of this research seem to support that concern.

Perceived Threat

Principle Axis factor analysis revealed three perceived threats to airline security. These included 1.Ground Security Breach, 2.Screening Breach and 3. In-Flight Takeover. Ground Security Breach, which was determined to be most salient, is the threat of a person or persons breaching security and entering the ramp or perimeter of an airport in order to initiate a terror event. The grand mean (7.32) corroborated this perception among pilots. Despite the emphasis on screening since 9/11, the sheer volume of manpower and financial resources committed, Screening Breach had the highest grand mean of 7.57, indicating a very strong perception of threat among pilots. In other words, pilots, who are required to undergo the same screening as passengers, perceive a screening breach to be the most likely threat facing the system. This is shocking in light of the aforementioned resources allocated to closing the gaps in this vital security layer. Pilots are in a unique position to observe screening because they have to undergo the process every time they go to work. A typical month of flying may yield between 30 and 40

screenings, which lends a great deal of credibility to pilot's perceptions in the matter. The fact that they feel as though it is still such a high threat does not bode well for current screening policy.

Risk of In-Flight Takeover

The result of 9/11 happened because one terrorist on each of three aircraft was able to enter the flight deck and secure it long enough to reach their objective. As discussed earlier, the fourth aircraft crashed short of the objective due to a timely and brave passenger revolt. Ultimately, all security procedures are designed to keep would be hijackers out of the flight deck. Contrary to popular belief, the most destructive weapon on an aircraft is the controls. With those a hijacker can turn the aircraft into a guided missile, which was illustrated all too well on 9/11. Because of these reasons, In-Flight Takeover was evaluated to be the most meaningful dependent variable for interpretation.

When demographics were measured against the risk of an in-flight takeover nothing other than gender was determined to be statistically significant. For unexplained reasons, females were more likely to perceive the risk of an in-flight attack. It is interesting that neither route flown nor aircraft type shared a significant relationship with in-flight takeover. The type of routes flown are generally domestic (within the U.S., Canada, or Mexico), or international (all other destinations). It was expected that perhaps perceptions of foreigners boarding aircraft or a lack of trust in foreign security at airports (they obviously vary by country), would have in impact on perceptions, but they did not. The same goes for type of aircraft assigned, which is either narrowbody (MD-80, Boeing 737) or widebody (Boeing 757, 767, 777 and Airbus A-330). The 757 and 767 were the aircraft used in the attacks of 9/11 perhaps for the size and fuel load able to be carried. It stands to reason that the larger the aircraft the greater the potential for

destruction. Even so, no relationship was found, which reveals that pilots perceive all aircraft to be equally vulnerable to attack, not just the type used on 9/11.

Correlation analysis was also used to examine the linear relationship between the six risk dimensions previously cited. The risk of ramp security and flight-deck security correlated the strongest with the threat of an in-flight takeover, which is not surprising. Pilots obviously perceive a breach of ramp security or a less-than secure flight deck would greatly increase the threat of in in-flight takeover. Breaching the ramp could lead to weapons or other contraband being placed onboard the aircraft, thus circumventing the screening process. As previously mentioned, ramp workers are not required to undergo the same screening that passengers and pilots are required to. Each airport is different; however, many simply require the flash of a line badge to gain access to the ramp. Also, tailgating, or following a fellow worker through a secure door, is a potential problem that may be accounting for pilot's perceptions in this area.

Perhaps the most revealing result of this research was the correlations between passenger and luggage screening, coproduction of in-flight safety, and the threat of an in-flight takeover. Many times throughout this paper passenger and luggage screening, as a front-line security policy, has been highlighted and examined. The Transportation Security Administration or TSA was mandated with assuming all screening functions following the failures of 9/11. Huge amounts of resources were poured into the nascent agency in the hope of deterring future terror events. Screening is looked at as the last line of defense from keeping a would-be terrorist off an aircraft, and as such is certainly the most visible to the traveling public. Numerous GAO studies have concluded that screening breaches still occur, despite this massive government investment. As such, it is understandable that pilots perceive and correlate a screening breach so strongly with the threat of an in-flight takeover.

What is most revealing, however, is that the coproduction of in-flight safety correlates nearly the same as passenger and luggage screening to the threat of an in-flight takeover. This telling statistic potentially highlights an area that has been left untapped when formulating security policy. Consider the example of the 9/11 crash of United Airlines flight 93. The coproduction of in-flight safety, or in this case the teaming of passengers and flight attendants to counteract a terrorist event, has largely been ignored as an effective counter terrorism strategy, despite the fact is essentially has a 100% "success" rate (success defined as countering the ultimate intentions of the hijackers).. Flight attendants can ask passenger to help assist them as a part of airline policy, but only after an event has occurred. Consider that passengers who sit in an emergency exit row are briefed by flight attendants on the exits operation and when to use it. Passenger lives are at stake if passengers fail to execute their responsibilities. No such prior coordination exists with a potential terrorist event. No announcements on what to do if someone attempts to takeover the aircraft, how to assist flight attendants and when, whether or not to stay seated or help block the flight deck, nor any other contingencies. Perhaps passengers could be encouraged to report certain behaviors that may be deemed suspicious. At any rate, the coproduction of in-flight safety clearly a powerful counter-terrorist force as evidenced by the taking back of United Airlines flight 93 by passengers and flight attendants.

Limitations

A study of this magnitude and ambition is not without limitations. The decision was made, due to time and budget constraints, to make the survey available to all currently employed pilots of American Airlines. This precluded the necessity for a random sample, thus greatly simplifying the process of gathering data. It was hoped that enough respondents would participate; however, that was not the case, resulting in a low response rate of (8.05%) when

factoring the population number of 8,169 pilots. With that being said, however, the researcher is confident that a representative sample was achieved considering some of the actual demographics closely matching the respondent's demographics. For instance, DFW had the highest response rate of 26.8% while having an actual rate of 24.4% of pilots at American Airlines. Additionally, the breakdown of respondents was 53.7% first officer and 46.3% captain, which compares closely with the actual rate of 53.3% and 46.7% respectively. Finally, those who reported flying international routes (41%) and domestic routes (59%) again compared closely with the actual rate of 45.2% and 54.8% respectively.

An additional limitation was that survey participation depended on logging in to the APA website. This presupposes that potential respondents log in on a somewhat regular basis given the survey ran for 10 days. Even if they did, they would then have to identify the survey and navigate to its page. Potential respondents may start to take the survey and grow tired after some questions and not pay as close attention to the remaining questions. The initial e-mail blast announcing the survey may have been discarded by potential respondents.

One final limitation is that this survey was conducted at a single airline, albeit America's largest. The perceptions of varying demographics at other airlines, including smaller "regional" airlines, could potentially vary from the perceptions discovered in this research. Any future research should ideally account for the above limitations.

Implications

These findings suggest that local knowledge and perceptions of pilots have largely been ignored in the formulation of aviation security policy. The juxtaposition of existing policy with the perceptions of what pilots identify as significant threats and risks facing the aviation system appear to be at odds. These finding seem to give credence to the concept of mētis as a valuable

contributor in the formulation of public policy, most especially aviation policy. The local knowledge of pilots can only be obtained through years of experience in the field and on the job. Moreover, this knowledge can not be obtained through reports or briefings; therefore, it is imperative it be used in the crafting of effective policy.

This study did provide important contributions to the existing literature regarding pilot perceptions of security risks and threats confronting the U.S. aviation system. As of the writing of this paper, no other significant survey of its kind has been found to exist. Therefore, these scales are a potentially valuable contributor for policymakers to consider before developing future aviation security policy.

Future Research

In the current exploratory study the perceptions of airline pilots employed at American Airlines were measured, analyzed, and compared to existing aviation policy. The central thesis highlighted the need for mētis or local knowledge to be considered when formulating security policy. Too often this local knowledge is overlooked in policy making, to the detriment of effective policy.

Future studies could apply the scales in this study to other airlines such as Delta, United, and Southwest. Additionally, smaller airlines such as American Eagle, Comair, and Air Tran could be considered as well. Additionally, any future research should include the perceptions of flight attendants, considering they are integral cogs in the defense of potential in-flight takeover attempts. Also, flight attendants are subjected to the same screening procedures and security that pilots are exposed to; therefore, their perceptions in those areas could be enlightening.

One important change to any additional studies would be to change the sampling methods from surveying the entire universe as the current study did, to a more traditional sample of the

universe. Even though confidence is high that a representative sample was obtained in this study, a more sound sampling method should provide greater statistical validity and reliability. These suggestions for future research were beyond the scope of the present study; however, if incorporated; they would add a dimension of refinement to a potentially valuable tool for the implementation of sound public policy.

REFERENCES

Anderson, J. E. (1994). *Public policymaking: An introduction* (2nd ed.). Boston, Houghton Mifflin.

Boxer, B. (2002, August 8). Aviation security under the transportation security administration: An update on screening passengers, checking baggage, ticket counter security, and new technology. *Field Hearing Before the Committee on Commerce, Science, and Transportation, S. HRG. 107-1099,* 1-32.

Bricker, J. B. (2005). Development and evaluation of the air travel stress scale. *Journal of Counseling Psychology, 52*, 615-628.

Bush, H. W. (2006). *The national security strategy of the United States.* Retrieved November 11, 2007, from www.whitehouse.gov/nsc/nss/2006/

CNN, (2006, January 15). *Iran plans Holocaust conference.* Retrieved December 11, 2007, from www.cnn.com/2006/WORLD/meast/01/15/iran.holocaust/

Chemrak, S., & Gruenewald, J. (2006, December). The media's coverage of domestic terrorism. *Justice Quarterly, 23*, 428-461.

Cohen, S. (1973). *Folks devils and moral panics: The creation of the mods and rockers*. Oxford, Great Britain: Basil Blackwell.

Dye, T. R. (1998). *Understanding public policy* (9th ed.). Upper Saddle River, NJ: Simon & Schuster.

Englhart, N., & Kurzman, C. (2006, June). Welcome to world peace. *Social Forces, 84*, 1958-1967.

Esposito, J. L. (2005). *Islam: The straight path*. New York: Oxford.

Fraher, A. L. (2004, May). 'Flying the friendly skies:' Why US commercial airline pilots want to carry guns. *Human Relations, 57*, 573-595.

Government Accountability Office, (2008, May 13). Transportation Security. *Statement of Cathleen A. Berick, Director Homeland Security and Justice Issues, GAO-08-487T,* 1-43.

Government Accountability Office. (2003, September). Airport passenger screening preliminary observations on progress made and challenges remaining. *Report to the Chairman, Subcommittee on Aviation, Committee on Transportation and Infrastructure, GAO-03-1173,* 1-20.

Gutman, L. (1954). Some necessary conditions for comon factor analysis. *Psychometrika, 19,* 149-161.

Hatcher, L. (1994). *A step-by-step approach to using the SAS(R) system for factor analysis and structural equation modeling*. Cary, NC: SAS Institute.

Hutchison, K. B. (2000, April 6). Oversight hearing on aviaton security. *S. HRG. 106-1136,* 1-66.

Joint Hearing before the Committee on Governmental Affairs, (2001, September 25). Weak links: How should the federal government manage airline passenger and baggage screening? *S. Hrg. 107-208,* 1-165.

Khashan, H. (1997, May). The New world order and the tempo of militant Islam. *British Journal of Middle Eastern Studies, 24*, 5-25.

Lewis, J. W. (2007). Precision terror: Suicide bombing as control technology. *Terrorism and Political Violence, 19,* 223-245.

Lyon, D. (2006, June). Airport screening, surveillance, and social sorting: Canadian responses to 9/11 in context. *Canadian Journal of Criminology and Criminal Justice, 48*, 397-411.

Marshall, R., Bryant, R. A., Amsel, L., Suh, E. J., Cook, J. M., & Neria, Y. (2001, May-June). The psychology of ongoing threat relative risk appraisal, the September 11 attacks and terrorism-related fears. *American Psychologist, 62*, 304-316.

McDermott, T. (2005). *Perfect soldiers*. New York: Harper Collins.

McGarrell, E. F., Freilich, J. D., & Chermak, S. (2007, May). Intelligence-led policing as a framework for responding to terrorism. *Journal of Contemporary Criminal Justice, 23*, 142-158.

Miller, L. (2006, April). The terrorist mind I. A psychological and political analysis. *International Journal of Offender Therapy and Comparative Criminology, 50*, 121-138.

Negroponte, J. D. (2006, May 1). *Office of the Director of National Intelligence.* Retrieved June 4, 2006, from www.dni.gov

North, O. (2004, June 24). *Oliver North: Know your enemy.* Retrieved June 15, 2007, from www.military.com/NewContent1/0,14361,FreedomAlliance_062404,00.htm

Nunally, J. C., & Bernstein, I. H. (1994). *Psychometric theory* (3rd ed.). New York: McGraw-Hill.

Nunnally, J. (1978). *Psychometric theory*. New York: McGraw-Hill.

Office of the Director of National Intelligence, (2005). *The national intelligence strategy of the United States.* Retrieved October 10, 2006, from www.dni.gov/publications/NISOctober2005.pdf.

Peterson, C., & Seligman, M. E. (2003). Character strengths before and after September 11. *Psychological Science, 14,* 381-384.

Ranstorp, M. (1996). Terrorism in the name of religion. *Journal of International Affairs, 50*(1), 41

Roach, J., Ekblom, P., & Flynn, R. (2005). The conjunction of terrorist opportunity: A framework for diagnosing and preventing acts of terrorism. *Security Journal, 18*(3), 7-25.

Rothe, D., & Muzzatti, S. L. (2004). enemies everywhere: terrorism, moral panic, and US civil society. *Critical Criminology, 12,* 327-350.

Rubin, B., & Rubin , J. (2002). *Anti American terrorism and the Middle East*. New York: Oxford.

Schmid, A., & De Graaf, J. (1982). *Violence as communication*. Beverly Hills, CA: Sage.

Scott, J. C. (1998). *Seeing like a State: How certain schemes to improve the human condition have failed*.. Binghamton, NY: Vali-Ballou Press.

Shrivastava, P. (2005). Managing risks in the age of terror. *Risk Management: An International Journal, 7*(1), 63-70.

Sweet, K. M. (2004). *Aviation and airport security terrorism and safety concerns*. Upper Saddle River, NJ: Pearson Education.

The 9/11 Commission, (2004). *National Commission on terrorist attacks upon the United States*. New York London: W.W. Norton.

Turk, A. T. (2004). Sociology of terrorism. *Annual Review of Sociology, 30,* 271-286.

U.S. Government Accountability Office, (2007, February). Aviation Security. *, GAO-07-299,* 1-96.

Vaisman-Tzachor, R. (2007). Profiling terrorists. *Journal of Police Crisis Negotiations, 7*(1), 27-61.

Welch, M. (2003). Trampling human rights in the war on terror: Implications to the sociology of denial. *Critical Criminology, 12,* 1-20.

Welch, M. (2006). Seeking a safer society; American's anxiety on the war on terror. *Security Journal, 19*, 93-109.

Wienek, D. (2005, Spring). Aviation security: Open skies? *The Journal of Counterterrorism & Homeland Security International, 11*(2), 1-3.

Young, A. (2007). Images in the aftermath of trauma: Responding to September 11th. *Crime Media Culture, 3*(1), 30-48.

APPENDICES

Appendix A

Perceived Risk Factor Analysis

Table A1

Perceived risk factor total variance explained

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings(a)
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	8.650	32.039	32.039	8.253	30.567	30.567	6.749
2	2.843	10.528	42.567	2.441	9.042	39.608	6.073
3	1.752	6.489	49.056	1.379	5.106	44.714	5.928
4	1.408	5.216	54.273	.957	3.545	48.259	3.210
5	1.247	4.620	58.893	.878	3.254	51.513	2.071
6	1.159	4.292	63.185	.650	2.408	53.921	2.422
7	1.037	3.839	**67.024**	.522	1.932	55.853	3.045
8	.845	3.128	70.152				
9	.772	2.859	73.012				
10	.702	2.601	75.612				
11	.675	2.501	78.113				
12	.625	2.314	80.427				
13	.594	2.198	82.625				
14	.547	2.026	84.651				
15	.476	1.763	86.414				

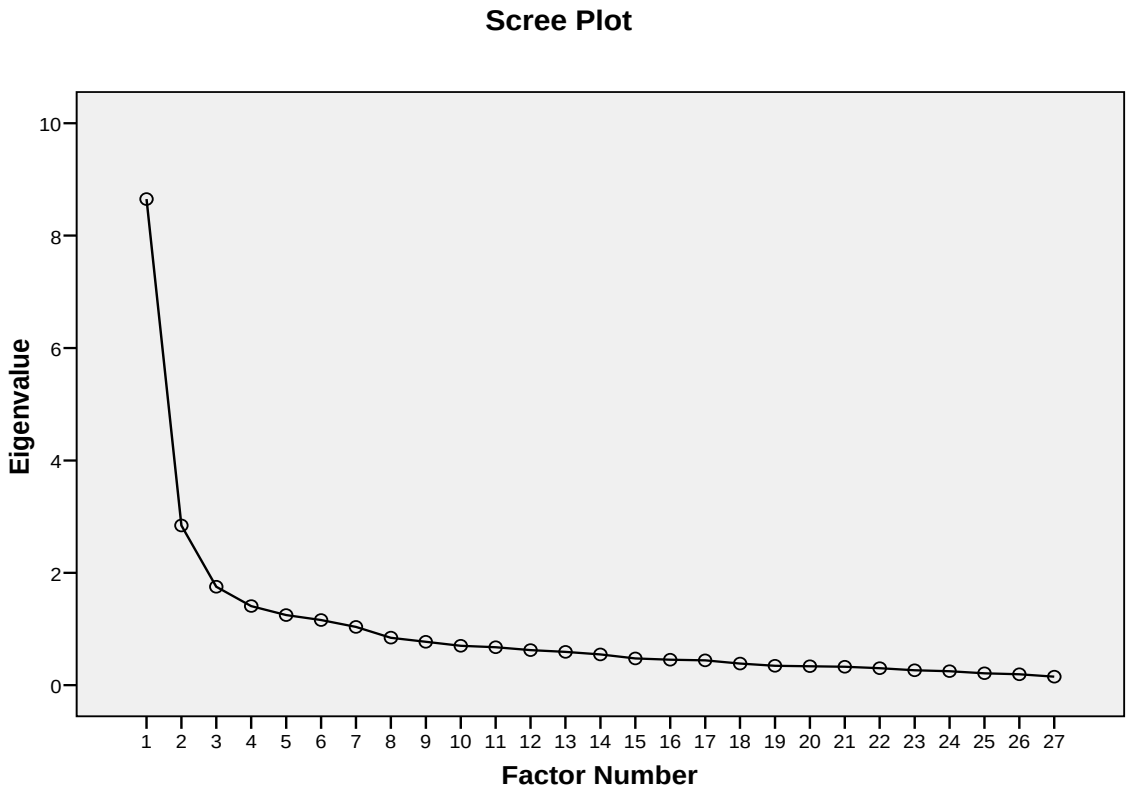
Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings(a)
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
16	.454	1.680	88.094				
17	.441	1.635	89.729				
18	.385	1.425	91.153				
19	.346	1.280	92.433				
20	.337	1.250	93.683				
21	.329	1.219	94.902				
22	.303	1.121	96.023				
23	.266	.984	97.007				
24	.249	.922	97.928				
25	.213	.790	98.718				
26	.194	.717	99.435				
27	.152	.565	100.000				

Table A2

Perceived risk factor loading pattern matrix

	Factor						
	1	2	3	4	5	6	7
c35	**1.013**	.022	-.222	.017	.015	.079	-.033
c32	**.862**	.000	-.178	.012	.004	.121	.020
c18	**.853**	.095	-.075	-.021	.055	.008	-.060
c26	**.691**	-.016	.190	-.060	.017	-.109	-.001
c22	**.603**	.004	.342	-.071	-.039	-.160	.021
c29	**.460**	-.132	.066	.148	.064	-.027	.207
c20	.098	**.920**	-.103	-.020	.013	.043	-.095
c16	.096	**.816**	-.034	-.057	.005	.066	-.066
c24	-.009	**.764**	-.087	-.027	.067	.000	.103
c12	-.110	**.727**	.130	.084	.005	-.082	-.083
c21	.038	**.440**	.098	-.034	-.140	.024	.244
c15	-.030	-.057	**.822**	-.048	.089	.159	-.097
c11	-.136	-.025	**.596**	-.014	.056	.128	-.028
c14	**.353**	.028	**.515**	.053	-.104	-.127	-.016
c19	.129	.075	**.490**	-.032	.072	.116	-.014
c27	.230	.055	**.353**	-.050	-.031	.046	.214
c13	.054	**.339**	**.346**	.207	-.038	-.095	-.064
c34	-.005	-.078	-.008	**.842**	.018	.011	-.062
c37	.145	-.022	.058	**.659**	-.082	.143	-.102
c28	-.004	.026	-.052	**.598**	.023	-.026	.121
c31	-.191	.173	-.092	**.470**	.097	-.043	.186
c17	.054	-.033	.077	.009	**.864**	.009	-.020
c25	.010	.062	.082	.021	**.760**	-.065	.028
c36	-.041	.029	.179	.047	-.054	**.761**	-.004
c33	.050	-.017	.160	.018	.003	**.701**	.067
c23	-.033	.022	.020	-.070	.035	.117	.524
c30	.075	-.091	-.140	.111	-.016	-.033	.514

Figure A1. Scree plot



APPENDIX B

Perceived Threat Factor Analysis

Table B1

Perceived threat factor total variance explained

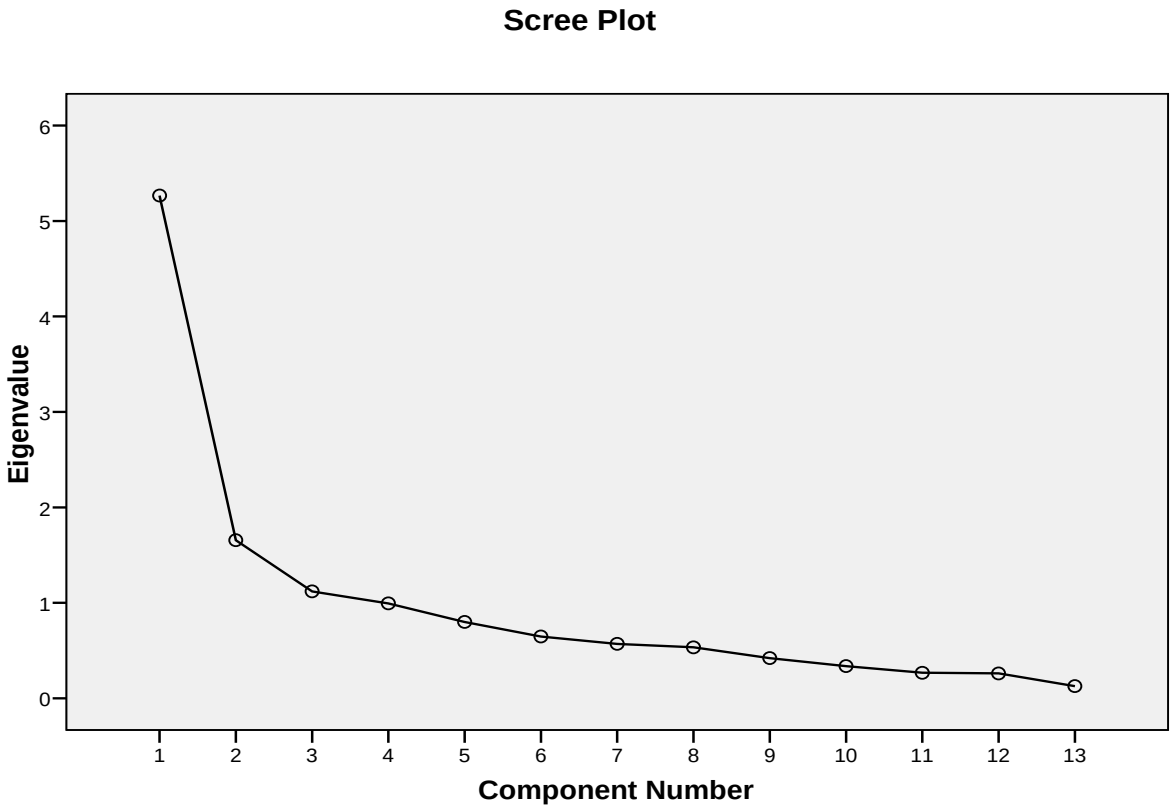
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings(a)
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	5.267	40.513	40.513	5.267	40.513	40.513	4.890
2	1.655	12.733	53.245	1.655	12.733	53.245	2.590
3	1.120	8.617	**61.862**	1.120	8.617	61.862	3.307
4	.994	7.647	69.509				
5	.799	6.149	75.657				
6	.647	4.977	80.634				
7	.570	4.388	85.022				
8	.534	4.109	89.130				
9	.421	3.241	92.371				
10	.337	2.590	94.961				
11	.267	2.056	97.016				
12	.261	2.005	99.021				
13	.127	.979	100.000				

Table B2

Perceived threat factor loading pattern matrix

	Component		
	1	2	3
c50	**.887**	-.081	-.136
c48	**.876**	.057	-.157
c49	**.818**	-.169	-.100
c40	**.709**	.244	-.097
c41	**.535**	.024	.238
c47	**.516**	-.097	.322
c42	**.493**	.101	.305
c44	**.438**	**.375**	.055
c38	-.091	**.932**	.006
c39	.014	**.900**	.002
c45	.099	-.057	**.863**
c46	.158	-.034	**.836**
c43	.449	-.123	-.534

Figure B1. Perceived threat factor analysis scree plot



APPENDIX C

Reliability Analysis of Perceived Risk (Independent Variable) Scales

Scale: Ramp Security

Table C1

Reliability Statistics

Cronbach's Alpha	N of Items
.864	6

I

Table C2

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
c35	15.5545	67.255	.761	.824
c32	15.5801	69.352	.685	.837
c18	15.7372	68.021	.756	.825
c26	15.9808	68.433	.718	.831
c22	16.4038	70.845	.720	.833
c24	13.8365	71.659	.417	.897

Scale: Flight Deck Security

Table C3

Reliability Statistics

Cronbach's Alpha	N of Items
.865	5

Table C4

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
c20	17.1345	70.053	.809	.806
c16	17.8038	70.735	.762	.818
c24	16.5491	74.166	.696	.835
c12	15.9604	72.811	.641	.851
c21	17.9826	84.737	.538	.870

Scale: Passenger and Luggage Screening

Table C5

Reliability Statistics

Cronbach's Alpha	N of Items
.740	4

Table C6

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
c15	10.6992	25.842	.615	.640
c11	9.5056	25.048	.433	.748
c19	10.4832	24.648	.592	.646
c27	10.8128	26.252	.517	.689

Scale: Coproduction of In-flight Safety

Table C7

Reliability Statistics

Cronbach's Alpha	N of Items
.756	4

Table C8

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
c34	18.4105	26.665	.653	.645
c37	20.1390	26.683	.531	.713
c28	20.2093	26.348	.567	.692
c31	18.2204	31.257	.474	.739

Scale: Air Marshal Protection

Table C9

Reliability Statistics

Cronbach's Alpha	N of Items
.810	2

Table C10

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
c17	7.3227	5.146	.688	.(a)
c25	7.9475	3.897	.688	.(a)

Scale: Passenger Profiling

Table C11

Reliability Statistics

Cronbach's Alpha	N of Items
.819	2

Table C12

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
c36	5.1799	5.472	.696	.(a)
c33	4.9283	4.650	.696	.(a)

APPENDIX D

Reliability Analysis of Perceived Threat (Dependent Variable) Scales

Scale: Ground Security Breach

Table D1

Reliability Statistics

Cronbach's Alpha	N of Items
.853	7

Table D2

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
c50	43.3942	106.496	.663	.827
c48	43.7580	104.948	.697	.823
c49	43.8686	105.623	.561	.841
c40	43.7933	103.789	.654	.827
c41	44.3702	101.277	.597	.836
c47	45.2324	103.742	.553	.843
c42	43.6218	103.471	.617	.832

Scale: Screening Breach

Table D3

Reliability Statistics

Cronbach's Alpha	N of Items
.831	2

Table D4

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
c38	7.7528	5.111	.721	.(a)
c39	7.3906	7.122	.721	.(a)

Scale: In-flight Takeover

Table D5

Reliability Statistics

Cronbach's Alpha	N of Items
.926	2

Table D6

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
c45	5.5079	6.781	.862	.(a)
c46	5.2333	6.736	.862	.(a)

APPENDIX E

Means Analysis of Perceived Threat Scales

Table E1

Factor 1 Means (Ramp Security)

		c35	c32	c18	c26	c22	c29
N	Valid	632	630	635	633	635	634
	Missing	8	10	5	7	5	6
Mean		3.0633	3.0492	2.8945	2.6493	2.2252	3.5962
Std. Deviation		2.04833	2.06395	2.02349	2.07003	1.89254	2.10717

Table E2

Factor 2 Means (Flight-Deck Security)

		c20	c16	c24	c12	c21
N	Valid	637	635	637	635	636
	Missing	3	5	3	5	4
Mean		4.2214	3.5543	4.8006	5.3890	3.3742
Std. Deviation		2.62840	2.69679	2.62477	2.88062	2.28274

Table E3

Factor 3 Means (Passenger and Luggage Screening)

		c15	c11	c19	c27
N	Valid	631	634	636	633
	Missing	9	6	4	7
Mean		3.1315	4.3375	3.3475	3.0237
Std. Deviation		1.93386	2.44037	2.12307	2.08545

Table E4

Factor 4 Means (Coproduction of In-Flight Security)

		c34	c37	c28	c31
N	Valid	633	634	635	635
	Missing	7	6	5	5
Mean		7.2559	5.5473	5.4394	7.4362
Std. Deviation		2.13490	2.39967	2.36710	1.98025

Table E5

Factor 5 Means (Air Marshal Protection)

		c17	c25
N	Valid	633	633
	Missing	7	7
Mean		7.9573	7.3175
Std. Deviation		1.97205	2.27228

Table E6

Factor 6 Means (Passenger Profiling)

		c33	c36
N	Valid	631	632
	Missing	9	8
Mean		5.1823	4.9225
Std. Deviation		2.34488	2.15604

APPENDIX F

Means Analysis of Perceived Risk Scales

Table F1

Factor 1 Means (Ground Security Breach)

		c50	c48	c49	c40	c41	c47	c42
N	Valid	634	633	633	635	631	634	635
	Missing	6	7	7	5	9	6	5
Mean		7.9211	7.5592	7.4581	7.5370	6.9540	6.0946	7.6835
Std. Deviation		2.05149	2.06080	2.36307	2.22825	2.55531	2.52267	2.35942

Table F2

Factor 2 Means (Screening Breach)

		c38	c39
N	Valid	636	636
	Missing	4	4
Mean		7.3836	7.7516
Std. Deviation		2.67222	2.25910

Table F3

Factor 3 Means (In-flight Takeover)

		c45	c46
N	Valid	634	631
	Missing	6	9
Mean		5.2208	5.5151
Std. Deviation		2.59574	2.60817

APPENDIX G

SURVEY INSTRUMENT

Section I

Please answer each question by marking the appropriate response or filling in the blank space provided

What is your current age in years?

What is your gender?

□ Male □ Female

What is your current crew base?

□ New York □ Miami □ L.A. □ Dallas □ Washington

□ Boston □ San Fran □ St. Louis □ Chicago □ Other

Do you currently fly narrowbody or widebody?

□ Narrowbody □ Widebody

Do you currently fly domestic or international?

□ Domestic □ International

Are you currently a Captain or First Officer?

□ Captain □ First Officer

Are you a former military pilot?

□Yes □ No

How many total years have you been flying for American Airlines?

What is the highest level of education you have successfully completed?

□ High School □ 2 year college degree □ 4 year college degree

□ Some graduate □ Graduate degree

How would you describe your political affiliation?

□ Very Liberal □ Liberal □ Moderate □ Conservative □ Very Conservative □ Other

Section II

Indicate how strongly you **Agree** or **Disagree** with the following statements by clicking the number that best represents your opinion. For example, if you **Strongly Disagree** with a statement you would check 1, and if you **Strongly Agree** with a statement, you would check 10.

1. Strongly Disagree **10. Strongly Agree**

TSA screeners who do not perform adequately will be disciplined.

1 2 3 4 5 6 7 8 9 10
SD □ □ □ □ □ □ □ □ □ □ **SA**

Flight deck doors are adequately reinforced to prevent unauthorized entry.

1 2 3 4 5 6 7 8 9 10
SD □ □ □ □ □ □ □ □ □ □ **SA**

Flight Attendants are adequately trained to handle terror events.

1 2 3 4 5 6 7 8 9 10
SD □ □ □ □ □ □ □ □ □ □ **SA**

Ramp workers receive adequate background checks.

1 2 3 4 5 6 7 8 9 10
SD □ □ □ □ □ □ □ □ □ □ **SA**

TSA screeners are adequately trained to identify individuals who pose a threat to aircraft security.

1 2 3 4 5 6 7 8 9 10
SD □ □ □ □ □ □ □ □ □ □ **SA**

I am confident that no unauthorized individuals can enter the flight deck.

1 2 3 4 5 6 7 8 9 10
SD □ □ □ □ □ □ □ □ □ □ **SA**

Air Marshals are adequately trained to deal with threats to aircraft security.

SD □ □ □ □ □ □ □ □ □ □ **SA**

Unattended aircraft are adequately secured

1 2 3 4 5 6 7 8 9 10
SD □ □ □ □ □ □ □ □ □ □ **SA**

TSA screening checkpoints are effective in identifying items that my be used to compromise aircraft security.

1 2 3 4 5 6 7 8 9 10
SD □ □ □ □ □ □ □ □ □ □ **SA**

The flight-deck is adequately secured from unauthorized access.

1 2 3 4 5 6 7 8 9 10
SD □ □ □ □ □ □ □ □ □ □ **SA**

There are a sufficient number of Air Marshal's to deter in-flight terrorist attacks.

1 2 3 4 5 6 7 8 9 10
SD □ □ □ □ □ □ □ □ □ □ **SA**

Ramp workers are effectively screened prior to entering the ramp.

1 2 3 4 5 6 7 8 9 10
SD □ □ □ □ □ □ □ □ □ □ **SA**

TSA screening procedures are uniformly applied to all persons regardless of an individual's racial demographics.

1 2 3 4 5 6 7 8 9 10
SD □ □ □ □ □ □ □ □ □ □ **SA**

Current policies regarding aircrew flight deck entry and exit are sufficient to prevent unauthorized access.

1 2 3 4 5 6 7 8 9 10
SD □ □ □ □ □ □ □ □ □ □ **SA**

I feel confident of an Air Marshal's ability to handle a terrorist event in flight.

1 2 3 4 5 6 7 8 9 10
SD □ □ □ □ □ □ □ □ □ □ **SA**

Ramp worker entry points employ adequate screening procedures.

1 2 3 4 5 6 7 8 9 10
SD □ □ □ □ □ □ □ □ □ □ **SA**

The TSA adequately screens all baggage.

1 2 3 4 5 6 7 8 9 10
SD □ □ □ □ □ □ □ □ □ □ **SA**

Passengers actively look for suspicious behavior.

1 2 3 4 5 6 7 8 9 10
SD □ □ □ □ □ □ □ □ □ □ **SA**

Ramp personnel follow security challenge procedures when credentials aren't displayed.

1 2 3 4 5 6 7 8 9 10
SD □ □ □ □ □ □ □ □ □ □ **SA**

Children are subject to the same search criteria as adults.

1 2 3 4 5 6 7 8 9 10
SD □ □ □ □ □ □ □ □ □ □ **SA**

Passengers are likely to intervene in threats to aircraft security.

1 2 3 4 5 6 7 8 9 10
SD □ □ □ □ □ □ □ □ □ □ **SA**

Aircraft cargo doors are secure when the aircraft is left unattended.

1 2 3 4 5 6 7 8 9 10
SD □ □ □ □ □ □ □ □ □ □ **SA**

Individuals displaying suspicious behavior receive increased screening.

1 2 3 4 5 6 7 8 9 10
SD □ □ □ □ □ □ □ □ □ □ **SA**

Flight Attendants actively look for suspicious behavior.

1 2 3 4 5 6 7 8 9 10
SD □ □ □ □ □ □ □ □ □ □ **SA**

Unattended aircraft are secured sufficiently to prevent unauthorized entry.

1 2 3 4 5 6 7 8 9 10
SD □ □ □ □ □ □ □ □ □ □ **SA**

Individuals acting nervous are more carefully screened than those who appear calm.

1 2 3 4 5 6 7 8 9 10
SD □ □ □ □ □ □ □ □ □ □ **SA**

Flight Attendants actively look for contraband that may be used to compromise in-flight security.

1 2 3 4 5 6 7 8 9 10
SD □ □ □ □ □ □ □ □ □ □ **SA**

Weapons will likely be brought through security checkpoints in the future.

1 2 3 4 5 6 7 8 9 10
SD □ □ □ □ □ □ □ □ □ □ **SA**

Contraband that could be used to compromise aircraft security passes through screening checkpoints

1 2 3 4 5 6 7 8 9 10
SD □ □ □ □ □ □ □ □ □ □ **SA**

Terrorists will likely penetrate an airport perimeter in order to carry out a terror event sometime in the near future.

1 2 3 4 5 6 7 8 9 10
SD □ □ □ □ □ □ □ □ □ □ **SA**

I believe a missile attack against a U.S. commercial aircraft will happen sometime in the near future.

1 2 3 4 5 6 7 8 9 10
SD □ □ □ □ □ □ □ □ □ □ **SA**

I believe there will be another terrorist attack onboard a U.S. commercial aircraft sometime in the next five years

1 2 3 4 5 6 7 8 9 10
SD □ □ □ □ □ □ □ □ □ □ **SA**

Air Marshal's are able to prevent threats to aircraft security.

1 2 3 4 5 6 7 8 9 10
SD □ □ □ □ □ □ □ □ □ □ **SA**

Baggage containing explosives will eventually get through screening checkpoints.

1 2 3 4 5 6 7 8 9 10
SD □ □ □ □ □ □ □ □ □ □ **SA**

Terrorists will gain control over an in-flight aircraft in the near future.

1 2 3 4 5 6 7 8 9 10
SD □ □ □ □ □ □ □ □ □ □ **SA**

Terrorists will find a way to gain access to the flight-deck, while in-flight, sometime in the near future.

1 2 3 4 5 6 7 8 9 10
SD □ □ □ □ □ □ □ □ □ □ **SA**

Terrorists will pose as flight personnel to gain access to aircraft in the near future

1 2 3 4 5 6 7 8 9 10
SD □ □ □ □ □ □ □ □ □ □ **SA**

Terrorists will target airport perimeters to compromise aircraft security

1 2 3 4 5 6 7 8 9 10
SD □ □ □ □ □ □ □ □ □ □ **SA**

Terrorists will likely corrupt airline ground personnel into carrying out their directives.

1 2 3 4 5 6 7 8 9 10
SD □ □ □ □ □ □ □ □ □ □ **SA**

Terrorists will attempt to compromise aircraft security by securing positions as legitimate airline employees.

SD □ □ □ □ □ □ □ □ □ □ **SA**

VITA

PAUL M. BOROWSKY

Personal Date:

Date of Birth: January 7, 1964

Place of Birth: Bad Krueznach, Germany

Marital Status: Single

Education:

Mt. Dora High School, Mt. Dora, FL, 1986

Florida State University, Tallahassee, FL, 1986

B.S. Criminology, April 1986

East Tennessee State University, Johnson City, TN, 2009

M.A. Criminal Justice and Criminology, May 2009

Professional Experience:

United State Air Force Officer

United States Air Force, 1986-present

American Airlines Pilot

American Airlines, 2000-present