READINESS FOR BLENDED RETIREMENT: A DESCRIPTIVE ANALYSIS OF FINANCIAL LITERACY AMONG YOUNG AMERICAN MILITARY MEMBERS

by

Michael Eldon Pontiff

Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

Doctor of Education

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ABSTRACT

In January 2018, the Department of Defense began the new blended retirement system for military members which includes an investment matching program in addition to a reduced pension at 20 years of service. This new system requires a forward thinking financial decision from a young population of Americans who may not possess substantial financial knowledge and experience to make an educated long term decision. The study examines the financial literacy of two groups of young enlisted Air Force members separated by two years experience in the service to determine if any significant changes in financial literacy occur through time and education in the military. The findings show a statistically significant difference in financial literacy between new recruits and two year airmen as measured by the Test of Financial Literacy and a subset of questions that measure knowledge of savings and investment. Subjective analysis shows poor financial knowledge and practices overall and is cause for concern regarding the readiness of young Airmen to decide about the matching program. This result contributes to a greater understanding of how little typical high school graduates in America know about personal finance and the positive effect of experience in the marketplace. The conclusions help curriculum designers gain understanding of how financial literacy changes through the early years of an Air Force enlisted career. Recommendations are included to provide better training systems to the youngest members of the military who must decide about investments at such an early stage in their career.

Keywords: Financial literacy, military service, Blended Retirement System, financial education.

Dedication

This dissertation concludes a five year journey, and many days of rigorous academic exercise followed by many days of patiently waiting for the process of approvals. Two things have been my foundation during this time, first the love and encouragement from my relationship with God. During this process my life goals changed, and I questioned the utility of my continued academic pursuits, but God kept my fire fueled and even when days were difficult, I felt his gentle nudge to keep pressing forward. Second, my wife Melissa, who has been with me every step of the way. She provided insight, encouragement, and support on days when I struggled. She let me make a substantial financial investment in my academic pursuits, without reservation, and always took care of every need at home during a difficult transition. I can never really put words to how much I love her. This dissertation is dedicated to the Lord, and my lovely wife Melissa.

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Liberty University is a great institution, and I am privileged to be able to be associated with it forever as an alumnus. I believe God is using this school to make an impact for Christ in the USA and globally. I wear my Liberty gear with pride and hope to continue with the University in some capacity. I would like to thank Professor Walstad for creating the Test of Financial Literacy. It made my work much easier to have a great instrument to use to collect my data. Thank you to Dr. Mark Thompson for helping me with edits and for his military service. I want to thank all the people who approved my data collection from the US Air Force: General Lenderman, General Pringle, Colonel Velino, Colonel Mills, Mr. Mike Romero, and Colonel Parker, as well as all the nice people at USAF HRPO office in the Pentagon.

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BRS – Blended Retirement System

CNN – Cable News Network

DOD – Department of Defense

TFL – Test of Financial Literacy

CHAPTER ONE: INTRODUCTION

Overview

Financial literacy and personal financial management have catapulted in importance in the era of personal, instead of corporate, retirement planning. Consider the fact that the United States Department of Defense (DOD) launched a new Blended Retirement System (BRS) in January of 2018 (Uniformed Services Blended Retirement System, 2016). The cultural change in financial literacy and the new BRS are the catalyst for the present study of military financial literacy among young service members. Most American young adults, including new military recruits, graduate from high school without a working knowledge in everyday personal finance matters (Avard, Manton, English, & Walker, 2005). The present quantitative study describes the changes of young Air Force members' financial literacy over two years in service and assesses if experience and existing financial education in two years is helpful in improving the deficiencies in young American adult financial literacy. The results of the study significantly help DOD leaders understand how new recruits' financial literacy changes over time. This knowledge allows defense agencies to train future recruits to make wise financial choices early in their careers, particularly in retirement planning thereby reducing financial stresses which in turn improves mission readiness.

Background

The Blended Retirement System

In a statement made to the Cable News Network (CNN), then Chairman of the Joint Chiefs of Staff Admiral Mike Mullen said, "The most significant threat to our national security is our debt" (CNN Wire Staff, 2010). This sentiment pervades among many leaders in America (Wong, 2016), and in response the DOD sent an initiative to change military retirement to Congress to help curb future costs (Banusiewicz, 2015). The DOD reduced future fiscal liability for retirement benefits by initiating a new retirement system for service members in January of 2018. The new retirement is called the Blended Retirement System. It takes parts of the previous pension program and blends it with a matching program. Starting in January 2018, the DOD contributes a matched portion to a retirement account with a service member's contribution up to 5%. DOD cost savings occur as some responsibility for retirement income shifts from the U.S. government to the service member and the free market. The DOD offers matched contributions up to 5% to retirement accounts of service members when they voluntarily participate at 5% of their base pay. The DOD is following the trend in American businesses to reduce long-term retirement costs. The percentage of full-time employees with fixed pension plans dropped from 87 percent to 44 percent from 1983 to 1998, meanwhile those with matching programs grew from 40 percent to 79 percent (Friedberg & Webb, 2005). Businesses shifted to matching models because of the merits of mobile retirement benefits for employees and reduced long-term liability for the companies who wish to honor their loyal employees.

Congress approved the BRS in the National Defense Authorization Act for Fiscal Year 2016 (114th Congressional Record S-1356, 2015). Congress directed more financial literacy training be given to service members when they stated "the Secretary of Defense should strengthen arrangements with other departments and agencies of the Federal Government and nonprofit organizations in order to improve the financial literacy and preparedness of members of the Armed Forces" (114th Congressional Record S-1356, 2015, Section 661). Congress recognized the potential for serious retirement funding deficiencies for future veterans who do not participate in matching, and directed education to help service members:

> Each service member, with the changes proposed in the retirement package, is going to have to assume a great deal of responsibility for planning his or her retirement-making investment selections, and choosing their monthly contribution percentage. And that is

> going to require a great deal of financial literacy and training on the part of the various services. (Representative Sanford Bishop (D-GA), J3OP-US1331: BRS Financial Counselor/Educator, 2016, p. 2)

The Defense Authorization Act included provisions for touch points in a service member's career where mandatory financial literacy instruction must take place. Touch points occur at pivotal moments, such as promotion, changing assignments, deployments, and 12 years of service. Congress wisely noted the potential risks of lost benefits for members who do not fully understand the new matching program, and desired to give them education in financial literacy to fully understand retirement savings (114th Congressional Record S-1356, 2015).

American Young Adult Financial Literacy

The Blended Retirement System may have overlooked the impact of a decision that must be made by an 18 to 23 year-old U.S. Air Force Airman. The new BRS requires the population of young Air Force members to choose their long-term retirement benefits after two years in the military. At the two-year point, service members become eligible to take full advantage of the matching program. Research demonstrates American young adults lack financial literacy (Avard et al., 2005). This young population possesses the least amount of financial capability per the Financial Capability in the United States Survey (Bumcrot, Lin, and Ulicny, 2013) which states "measures of financial capability are lower among entry-level enlisted personnel (E1-E4)" (p. 4). This trait is not exclusive to the military; they share lack of knowledge and financial capability with their civilian counterparts. The Financial Capability in the United States (Bumcrot et al., 2013) survey also demonstrated that young Americans have lower financial literacy than older Americans. Young Americans in lower income brackets typically perform marginally in their understanding of compound interest and debt (Lusardi & Tufano, 2015). Coincidentally, compound interest is the key feature for best results of the matching program offered by the

DOD making young military members vulnerable to poor planning due to lack of knowledge. Therefore, the primary interest of this study is to discover if the two-year point service member has progressed in their understanding of financial matters. Research suggests service members may lack knowledge to make a wise retirement decision and they still lack knowledge and experience in personal financial matters.

One might think this lack of knowledge can be overcome by an expansive education initiative. This thought is reinforced to some degree by research, such as the study by Bernheim and Garrett (2003) who found that employees are more likely to participate in 401k programs when the employer offers financial education. However, most Americans learn lessons about financial literacy from experiences rather than education programs (Hogarth & Hilgert, 2002). This is reinforced for the millennial generation when Friedman and West (2015) state "financial education is considered insufficient for helping Millennials make good financial choices without also providing them with opportunities to do so via financial inclusion; they need institutional arrangements that provide them with opportunities to operationalize their knowledge" (p. 349). Thus, the future of DOD financial literacy education should incorporate financial literacy practice with real numbers, real money, and personal participation.

The downside to long-term elective investment matching programs is that participants must get invested in the program very early to gain maximum benefits of compound interest. Any service member who waits to save for retirement until later years under the BRS will not only have a reduced pension but also miss matching opportunities early in their career. Essentially, there is only one opportunity to get on the track to maximize retirement benefit, and every delay costs the service member money in the end. If a service member waits to put into practice this valuable financial lesson late in their career, there is no way to gain back the lost benefit. The good news is that if market forces remain consistent with their historical performance, the new members could have a much more substantial retirement savings and earnings potential than current members if they participate fully (Uniformed Services Blended Retirement System, 2016).

Theoretical Framework

The guiding theoretical framework for this quantitative study on financial literacy is Malcolm Knowles adult learning theory as described in *The Adult Learner* (Knowles, Holton, & Swanson, 2005). This theory describes six primary assumptions that differ from pedagogical models of instruction. First, adults need a reason to learn something before they will learn it. In the context of this study, one assumes that financial literacy learning will take place simply due to exposure to market forces. A need to know situation is created as the service members manage their finances during the first two years. Second, the learners' self-concept needs to be reinforced. Self-concept is defined as the movement and maturity of ones sense of self-being dependent as a child to a self-directed adult. In the context of the Blended Retirement System, Airmen have more control over their own financial future instead of relying on the reduced long-term pension giving a greater self-concept. Third, experience is the most important factor in learning, so adults need exposure to personal financial decisions and their outcome in order to learn (Knowles et al., 2005). Unfortunately, the lesson of saving for retirement is unforgiving. By the time the experience of not saving enough is learned, there is less time to make up the losses. Fourth, adult learners need to have a readiness to learn. The significance of this study is rooted in the question of when has enough time lapsed for a young service member to realize they should be saving for retirement. Is there enough readiness to learn inspired at the two-year point? Fifth, learning needs to be task and problem centered, so using real life scenarios and discussions are practical. Sixth, adult learners need to possess intrinsic motivation for learning to occur.

Experience is the most effective tool for increasing financing literature according to traditional theories. This is reinforced when Knowles (1977) encouraged adult education programs to help people develop competency rather than help them absorb content. Deacon and Firebaugh (1981) suggested Family Resource Management Theory in financial education with experience as the primary learning factor as adults continuously manage their money. Other studies determined parental influence or taking a personal finance course in high school are not significant in development of financial knowledge (Jorgensen & Savla, 2010; Peng, Bartholomae, Fox, & Cravener, 2007). This leaves room for adult learning theory as a primary influence to help shape financial knowledge. Further research supports adult learning since relevancy is powerful in individual financial education (Fernandes, Lynch, & Netemeyer, 2014). An example is a study that showed high school students who possessed their own credit cards retained more financial knowledge than their counterparts who did not have a credit card (Walstad, Rebeck, & MacDonald, 2010). With the theoretical framework of experience and relevancy being key to developing financial literacy, the stage is set to evaluate service members' financial literacy development over the course of two years of service. By the time two years of paychecks and life lessons have their effect, it is hypothesized that increases in financial literacy occur as experience with money has a positive effect on learning as predicted by Knowles theory (Knowles et al., 2005).

Problem Statement

Significant progress has been made in the research surrounding financial literacy since it was determined that poor knowledge and practices were a contributing factor to the recession and the subprime mortgage shakedown in 2007 (Volpe & Mumaw, 2010). A benchmark study in financial literacy is the widely referenced Financial Capability in the United States (Bumcrot et al., 2013) survey. The results of the survey show that certain risk factors such as education, income, and age all have a role in altering an individual's financial literacy and capability. Financial education research has also boomed including studies at the elementary, secondary, and college levels. Most of the research in financial literacy has been descriptive. Some use largely separated age groups, such as the Financial Capability in the United States (Bumcrot et al., 2013). Research focused on the military has been largely commercial in nature, produced by banking institutions that work with military customers. The Financial Capability in the United States (Bumcrot et al., 2013) did a descriptive study of military personnel and their financial health and found that older military members scored better on a financial literacy quiz. On five questions, the 36 plus years-old military member scored on average 3.6 questions correct versus the 18-25 year old member who scored on average 2.5 questions correct.

A gap exists in the literature for financial literacy studies for military members over short periods of time, particularly in the first two years of service. The two-year mark is critical for new recruits in the BRS because at that point they can elect to take full advantage of the matching program offered by the DOD (Uniformed Services Blended Retirement System, 2016). This leaves the young service member with only two years of real world financial experience to make a long-term financial decision. This study intends to determine if two years is enough time to learn the benefits of compound interest and saving, a key component of the new BRS. It is critical that a study evaluate just how much learning in the area of personal finances occurs during the first two years of service to determine if existing education and training structures are helping members progress. The problem is that no other study has quantitatively captured if a young Air Force member has progressed and acquired the requisite knowledge and financial literacy to make a sound matching decision under the BRS.

Purpose Statement

The purpose of this study is to determine the difference in financial literacy, as measured by the Test of Financial Literacy (Walstad & Rebeck, 2016), between a new recruit and a service member with two years of experience in the U.S. Air Force. The younger population provided the baseline and consisted of recruits who were awaiting basic training following high school graduation. The comparison population consisted of individuals who were at the two-year point of service. These Airmen have two years total time in service, plus six months or minus six weeks. Airmen with more than two years of civilian experience after high school were excluded to eliminate any significant financial experience development in their civilian life. The target population was 18 to 23 years old. The measure of financial literacy variable was the survey instrument called the Test for Financial Literacy (Walstad & Rebeck, 2016). The findings determine if there is or is not significant development in financial literacy over two years, and concludes that the airmen risk missing their best opportunity to generate retirement revenue.

The present study blends results with adult learning theory (Knowles et al., 2005) to make recommendations for future training and education events employed by the DOD. The DOD already has mandated training events with the Blended Retirement System, so there will be a necessity to include engaging events which inspire a readiness to learn. Ensuring the information in the training events is relevant to current circumstances increases young service member's readiness to learn (Fernandes et al., 2014).

Significance of the Study

The findings of the study determine that current financial literacy instruction and experience in the military is not necessarily sufficient to help a two-year member make a good personal decision about retirement options under the BRS. Although the study found that a statistically significant difference exists in financial literacy after two years, the overall lack of knowledge still supports a need for a more robust financial literacy education in the Air Force. The findings reveal that sufficient financial literacy knowledge is missing for a two year airman to make an informed decision about the DOD retirement savings-matching program. Beyond utility to the Air Force, the findings and recommendations are useful for sister military services as they initiate the Congressionally directed financial literacy training mandated by the National Defense Authorization Act for Fiscal Year 2016 (2015).

Additionally, the study is useful for supporting the ongoing discussion for improved financial literacy instruction in public education. Poor financial literacy was one of the contributing factors to the American economic recession and housing bubble burst of 2007 (Geradi, 2010; Volpe & Mumaw, 2010). Financial literacy progress analyzed in the study helps underscore the value of real-life experiences and gives further evidence to support adult learning theories (Friedline & West, 2015). Other studies have assisted the financial literacy discussion when they analyzed descriptive statistics in American teenagers, people living in rural areas, and college students (Avard et al., 2005; Cochran, 2010; Collazo, 2016; Sullivan, 2016). The Financial Capability in the United States (2013) already describes the financial literacy of the American military. A South African military financial literacy study reports that poor financial management results in reduced military effectiveness (Schwella & van Nieuwenhuyzen, 2014). This present quantitative study contributes further to the existing understanding of this critical problem by analyzing the effect of time in military service on financial literacy, and recommending design for a new training and education program to increase readiness as members plan for retirement autonomously.

Research Questions

RQ1: Is there a significant difference in financial literacy, as measured by the Test of Financial Literacy, between U.S. Air Force Airmen who are new to the service and those with two years' time in service?

RQ2: Is there a significant difference in understanding of savings and investment, as measured by select questions on the Test of Financial Literacy, between U.S. Air Force Airmen who are new to the service and those with two years' time in service?

Definitions

The academic and cultural discussion about financial literacy in America has been evolving and changing. A very important study in the subject evaluated 41 different studies on financial literacy to search for common themes (Huston, 2010). From the expansive list of studies, some common definitions emerged and are used for this study on financial literacy.

1. *Financial Literacy* – Measurement of how well an individual can understand and use personal finance-related information (Huston, 2010). Beyond checkbooks and home economics, it encompasses knowledge and practices with investments, debt, and taxes (Kezar & Yang, 2010).
2. *Financial Capability* – The ability to sustain oneself during financial hardship and unexpected expenses (Financial Capability in the United States, 2013).

CHAPTER TWO: LITERATURE REVIEW

Overview

Literature available on the topic of financial literacy has increased significantly in the last decade. The catalyst for new research was the national crisis with the subprime mortgage real estate collapse in 2007. The interaction of poor personal financial literacy of consumers when making home purchases and poor lending practices were the culprits of the banking crisis. Risky lending practices inflated the housing market and left many people with mortgages at a higher level of borrowing than the value of their home (Volpe & Mumaw, 2010). Other cultural influences have increased national public interest in financial literacy and research. A cultural change is underway as consumers flock to adult personal finance education programs provided by people like Dave Ramsay. His program, “Financial Peace University” has helped over 4.5 million American families reduce debt and manage personal finances (Ramsey, 2017). These changes and cultural shifts provide evidence that young adults do not possess the requisite financial behaviors to avoid poor choices as consumers, and later properly respond to financial difficulty because of life experiences.

Financial literacy studies included in this literature review explore geographical populations, race and ethnic populations, generational populations, financial education resources, and military populations among many others. Substantial effort has been made in the understanding of financial literacy and how Americans educate and prepare for retirement decisions. There has been an increase in financial education opportunities for Americans, both private and public. Despite the increase in numbers of financial education programs available in the last few years, there have been very few evaluations published to assess the impacts of these education systems (Collins & O’Rourke, 2010). Even fewer studies have looked at the longitudinal effect of time and experiences on development of financial literacy. This present study attempted to address a gap in research literature and to contribute to a greater understanding of how personal finance develops over two years of military service.

Theoretical Framework

The study was rooted in the theoretical framework provided by Knowles (2005) adult learning theory. There is evidence that recent studies need stronger theoretical bases to better understand the link between financial knowledge and financial behavior. Collins and O'Rourke (2010) evaluated 41 financial education studies and the methodologies employed. The primary recommendation of the review is that future financial research incorporate more randomized sampling and theory based evaluations. Overwhelmingly, the studies they evaluated did not manage inherent biases and needed a theoretical framework. The present study employs these recommendations and constructs a research design based on the framework of Malcolm Knowles adult learning theory from *The Adult Learner* (Knowles et al., 2005). Additionally, the populations sampled within the survey group are randomized to eliminate bias.

Reason to Learn

Adult learning theory encompasses six tenets that guide adult learners, but emphasis in the present study was the value of experience. The first tenet of adult learning theory is that an adult needs a reason to learn something before they will learn (Knowles et al., 2005). Within the context of this study, the theory applies because a new Air Force recruit does not possess as much financial experience as a member with two years' experience. The study sought to discover whether two years is enough time for there to be a substantial difference in financial literacy. It has already been demonstrated by the Financial Capability in the USA study (Bumcrot et al., 2013) that long-term financial experience positively influences financial outcomes, when 37% of mid-level enlisted members reported having difficulty paying monthly bills compared to 56% of low-level enlisted members. There is typically a break of five to seven years of experience between those populations. Within the lower ranked enlisted population (E-1 to E-4) there are no subsets to determine if learning has taken place, or if enough “reason to learn” has been created by life circumstances to inspire wise retirement planning. This study helps to fill this gap.

Learner Self-Concept

The second tenet of adult learning theory is that a learner’s self-concept needs to be reinforced (Knowles et al., 2005). The present study uses this tenet to make recommendations for future educational and training options available to the US Air Force. The findings reveal a lack of significant financial literacy change over the first two years, so training modules that reinforce the self-concept and individual ownership of important financial decisions are critical to increase financial literacy. The findings of the study also reveal a measurable growth in financial literacy, providing more evidence to support adult learning theory. Additional testing is necessary to determine if the growth is caused by increased self-concept as the learner begins to manage his or her own finances. The study contributes to existing literature on the value of financial experience, and makes recommendations based on how self-concept shapes financial decisions for training programs to be effective to assist members. Any future work to improve an Airman’s financial behaviors needs to recognize and emphasize the self-concept aspect of adult learning theory.

The Value of Experience

The third and most important tenet of adult learning theory for this study is the value of personal experience. The populations sampled are randomized and are as homogenous as possible except for the experience of managing money provided by two years’ time in the military. The FINRA (Bumcrot et al., 2013) analyzed military populations for measures of financial literacy and capability, and on almost every scale, there was a positive progression of time correlated with better financial decisions. For example, out of five questions related to financial literacy skills 71% of the 18-25 year-old military respondents answered three or fewer questions correct compared to 55% of 26-35 year-olds and 38% of 36+ year-olds (Bumcrot et al., 2013). In addition, the respondents who have a self-directed retirement account increased from 47% to 68% to 77% for enlisted members in the ranks of E1-E4, to E5-E6, to E7-E9. Both of these positive indicators display a strong correlation between the value of experience and good financial practices and knowledge in the military.

The present study examines the increase in financial literacy over a shorter period by looking at only the first two years' experience. New Air Force members are required to make a determination about retirement savings matching at two years' time in service under the new Blended Retirement System. Knowles' theory (2005) holds that adult learners need to participate in decision-making and see the eventual outcomes to learn by experience. Experience has theoretically been the largest force for understanding personal finances. Deacon and Firebaugh (1981) reinforce the idea in their family resource management theory, which relates the value of experience to personal financial experiences. The trouble with employer matching programs is once the experience of learning about lost compound interest and lost matching funds has occurred the best return for money has already passed. There is no opportunity to replace the lost matched money in the new Blended Retirement System.

Readiness to Learn

The fourth tenet of Knowles adult learning theory is that learners need to have a readiness to learn (Knowles et al., 2005). A readiness to learn can be cultivated by increasing relevancy of instructional material to real world activities of adult learners. Fernandes (2014) demonstrated the relevancy of financial instruction increases a learner's willingness to absorb content and apply sound financial practices. Yob (2014) performed a literature review and demonstrated that learning opportunities provided by real world experience, called service-learning, could increase school retention because of the power of relevancy. By making instructions relevant and applicable to real world situations, learning can be multiplied as the readiness to learn is increased.

Task and Problem Centered Learning

According to the fifth tenet of adult learning, a learner needs to have task and problem centered educational experiences (Knowles et al., 2005). Many adults plunge into financial difficulties at young ages and spend many years climbing out of debt (Avard et al., 2005). Financial knowledge will likely increase, but financial behavior may still be lagging unless the problems of increased debt begin to inspire learning. Financial decisions are shaped by opportunity to make mistakes and learn from them, so problems and task centered learning will have taken place naturally in the first two years. The FINRA study (Bumcrot et al., 2013) demonstrated observable and measurable financial problems looking at trends and differences in military populations differentiated by years.

Intrinsic Motivation

The sixth and final tenet of adult learning theory is that an adult learner must possess intrinsic motivation for learning to occur (Knowles et al., 2005). External motivations such as social pressure and reward are not as valuable for learning as intrinsic motivations such as a sense of accomplishment or information needed for oneself. An adult learner should have programs that encourage competency in skills rather than just absorbing content (Knowles, 1977). The Walstad (2010) study demonstrated the link between credit card ownership and retention of financial education content primarily due to the fact that the learner has an intrinsic motivation by owning a credit card. The counterparts without cards had less motivation to learn because there was little application to their own financial decisions.

Knowles (2005) complete theory and the six tenets are the framework to evaluate a new Air Force recruits' development of financial literacy knowledge and behaviors. The study analyzes the results and contributes to an understanding if the first two years of service and independent financial decision making is enough for young military members to develop a long term understanding of personal finance. The results within the study use the insightful adult learning theory to make suggestions and recommendations for educational programs and future study.

Related Literature

The research available on the topic of financial literacy is expanding. The sources and information are varied due to the complex and multifaceted lenses applied to personal finances. Some literature is produced and sponsored by commercial organizations who hope to generate more revenue for their clients by understanding the consumers better. Some literature is academic and hopes to better understand the human perspective of finances. In addition, there is some literature available from government sources in order to provide better education and information for the common good. Wright (2016) provides a short list of major organizations that are government sponsored to help increase financial literacy in the population through research and education, including: Jump$tart Coalition, Financial Literacy and Education Commission, and the Office of Financial Education, Department of Treasury. When a population has sound financial practices, the economy of the nation can prosper (Lusardi & Mitchell, 2014). As evident with the financial collapse of 2007 related to the housing bubble, when a population has detrimental financial practices, the economy and government credibility suffers (Volpe & Momaw, 2010; Wright, 2015).

The Needs and Benefits of Increased Financial Literacy

Research has demonstrated the need for higher levels of personal financial literacy, especially in the wake of the economic crisis of 2007/2008 (Gerardi, Goette, & Meier, 2010). Governments globally are starting to acknowledge that education efforts in personal finance create an increase in economic stability and development. The reason financial education has become more essential lately is due to an increase in available financial products and services, the rising demand for global financial services, shifting risks from employers and government to individuals, and growing individual responsibility for retirement and health costs (OECD, 2014, p. 14). Financially literate populations are a catalyst for competition and innovation in the marketplace, as they make more informed purchase decisions (OECD, 2014). Financially literate populations are "better able to manage their money, participate in the stock market and perform better on their portfolio choice, and more likely to choose mutual funds with lower fees" (OECD, 2014, p. 16). Better financial literacy leads to increases in personal wealth. Individuals who have higher financial literacy may have as much as 35% more financial assets (Fort, Manaresi, & Trucchi, 2016).

The right time to begin financial education is in youth (Whitebread & Bingham, 2013). The vast array of financial resources and the development of technology for electronic banking and transfers have changed the way the world handles money. A decrease in cash based economies in the era of plastic cards and online shopping have dramatically altered the landscape of financial decision making for the newest generation. Additionally, there is more likelihood that this new generation will be more responsible for their own retirement savings and investments than previous ones (Friedberg & Webb, 2005). For evidence of this trend, a good example is the Blended Retirement System for military members, which is the driving factor for this study.

Constructivist Development of Financial Literacy in Youth

Whitebread and Bingham (2013) address five important factors, which influence a young person's development of financial literacy skills. Using a constructivist theoretical model, they identified the most important factors to which a young adult builds their understanding of financial concepts. The first is the practices of parents and parenting styles. Children are always watching parents and by the time they reach adulthood will have witnessed and benefited from thousands of financial transactions by their parents. If all they see is a credit card as a tool to make purchases, a young child has no concept of what something costs. The credit card becomes a key to unlock material items without ever really understanding the dollar value attached to the item. In addition, varied parenting styles contribute to financial understanding (Jorgensen & Savla, 2010). Parents who assign chores and pay for tasks contribute positively to an understanding of how personal finances work and help children establish a value for money. There is a link between a student's family economic background and education level to their understanding of financial concepts (Lusardi, Mitchell, & Curto, 2010). Therefore, it is essential that public education step in to fill the gap for impoverished and low-income families to improve financial literacy for those who have less.

Next, teachers and education have a role to develop a youth's financial literacy (Whitebread & Bingham, 2013). Students are motivated for positive academic success due to the promise of a good career and higher pay in their adult life. Many see university as the avenue to financial success in adulthood, and the promise of future income is a primary motivation to pursue academic study. Teachers also can influence financial literacy by helping teach fundamental concepts of finance and economy. Effective teachers can help students reflect and talk about their learning in financial concepts, just as ineffective teachers can inspire students to have a negative association with personal finance.

Third, peer influences affect financial literacy skills (Whitebread & Bingham, 2013). In America, there is a saying about trying to keep up with the Jones. The meaning is that Americans look around at their neighbors and see how they measure up financially. If the neighbor gets a new car, suddenly everyone wants a new car. This philosophy is present in youth circles, but it happens to be the newest gadget or device which inspires the consumer frenzy. Helping youth control their desire to acquire things is a parental responsibility, but the effect of peer influences is significant to developing financial spending habits.

Fourth, media influences financial literacy development in youth. Whitebread and Bingham (2013) report that a survey in the United Kingdom found 63% of all children had a television in their room, with an average time watching television of around two and a half hours per day. Certainly, the media influences a youth's development of financial literacy. Youth are exposed to numerous media sources from sitcoms to cartoons, and the situations portrayed on the television influence how they think about money. Fifth and closely related is the power of advertising (Whitebread & Bingham, 2013). Youth markets are expanding and many companies are trying to get their share of the money. Commercials can be specifically designed to catch the eyes and increase the spending desires for youth.

The constructivist model of financial literacy and the lack of development of personal experiences in financial issues for American youth is a problem that may be overcome with education (Whitebread & Bingham, 2013). If parents supply all the material needs of their children, and the only experiences children have with money is spending it on the luxuries they want, when reality of life and choices for positive financial outcomes are demanded of them will they be able to manage? Clearly, there is a need for an expansive and effective financial education program for youth (Whitebread & Bingham, 2013).

American Public Financial Education

Unfortunately, research reveals that American education is not up to the task of preparing young adults for positive financial outcomes (Peng et al., 2007). American public education has come up short in meeting the demand for financial educational programs. The Council for Economic Education (2016) produces a biannual survey of states to evaluate trends in financial education in high school. The most recent survey found that although more states are implementing standards in personal finance, only 17 states require students to take a course in personal finance. Less than half of the states, only 20, require a course in economics (Council for Economic Education, 2016). The results of this lack of education produce a population who are not prepared to manage personal finances. Avard, Manton, English, and Walker (2005) gave a survey to college freshmen to determine their financial knowledge. The average score was 34.8 percent, demonstrating recent high school graduates lack knowledge about everyday financial matters. Lusardi and Tufano (2015) found that only about one third of an American population grasped the basics of compounding interest. This fundamental concept is essential to understanding the value of matching programs and long term investing for retirement. In addition, Lusardi and Tufano (2015) found that individuals with lower levels of financial literacy have more negative borrowing experiences, such as high interest loans.

The Jump$tart Coalition for Personal Financial Literacy is a group of organizations whose goal is to improve the financial literacy of students from kindergarten to college (Jump$tart Coalition, 2017). They administered a survey among high school seniors biannually from 1997 to 2008 evaluating trends in financial literacy education. The results produced a disturbing negative trend in performance on the survey questions (Mandell, 2008). In 2008, 6,856 high school seniors completed the survey and had an average score of 48.3 percent, which was the lowest score recorded (Mandell, 2008). A summary of the test results by year is provided in Figure 1. The figure shows the overall trend in high school senior performances on the quiz from 1997 to 2008. The maximum score available is 100, and the minimum score is 0. The results of the survey suggest that for all ethnicities, geographic locations, and income levels, students receive poor scores on the financial literacy quiz and the trend is getting worse.

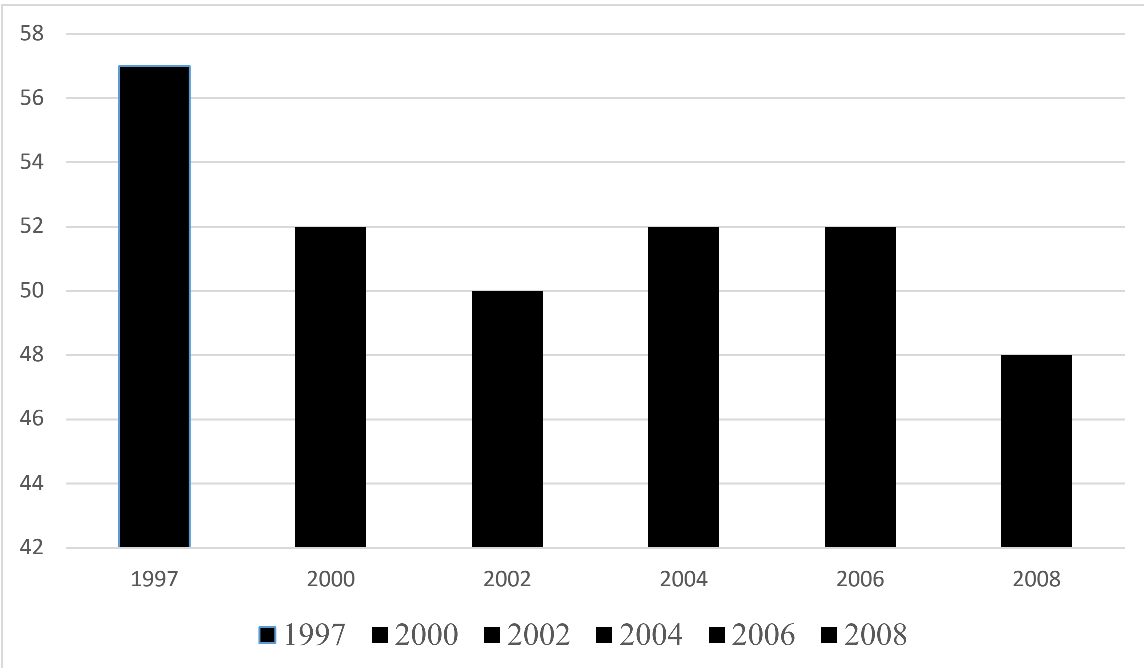

Figure 1. Results of the Jump$tart Financial Literacy Quiz (p. 14).

Moten (2011) used the results of the Jump$tart survey in 2008 to evaluate the results based on ethnicity and income levels. His findings suggest that as family income levels increase, so does performance on the quiz. The exception was among African American students whose results indicated that as income increased, performance on the quiz decreased. Other studies confirm this trend. Cochran (2010) demonstrated that youth attitudes toward positive financial behaviors increased from superficial awareness to enthusiastic responsibility after an education program. America Saves (2015) released some data indicating attitudes of low and moderate-income youth. The negative results demonstrated that youth lack knowledge of how to save and have difficulty choosing to save. There were positive factors, such as a willingness and desire to work for money, staying away from borrowing, and living within one's means, but these attitudes needed to be fostered and encouraged to become financial behaviors. Those behaviors include practices such as automatic transfers and employer matching. Clearly, the American education system has a long way to go to help students prepare for the demands of being a financially literate and responsible population. Even if education programs are implemented, their outcomes may not be effective to create financial behaviors (Reilly, 2016).

Other Factors and Financial Literacy

Many other factors have been analyzed including race, perceived financial literacy, student borrowing, generational factors, educational experiences, and geographic locations. Sprow (2010) analyzed adult female Latino financial literacy learning, which revealed a primary factor for improved learning amongst this ethnic group was personal stories and the value of small measurable changes and goals. Allgood and Walstad (2016) found that actual and perceived levels of financial literacy influenced financial behaviors. The findings suggest that how a person feels about how well they manage money may be just as important as what they know about managing money when it comes to making financial decisions. Sullivan (2016) found that community college students often underestimate how much they borrow and overestimate their earning potential, which influences the amount of money and time required to pay back student loans. Wright (2016) demonstrated that there is no significant difference in financial literacy based on the type of high school education experience, either public, Christian school, or home school. Collazo (2016) analyzed financial knowledge among rural communities, who are commonly plagued with decades of poor financial decisions, and found that a financial literacy program increased their ability to manage personal finance.

Generational factors may also affect individual attitudes toward financial literacy (Friedline & West, 2015). For example, children who grew up in the era of the Great Depression have a dramatically different understanding of personal finance than Millennials who are raised in an era of prosperity. Friedline and West (2005) analyzed data from the 2012 National Financial Capability Study looking specifically at the millennial generation born between 1980 and 2000. They found that one-third lack emergency savings and one-third report using high interest alternative borrowing services such as payday loans and pawnshops. These high-risk behaviors make it less likely that these individuals can stand up under financial troubles.

Even when financial literacy education is supplied, one study has demonstrated that something more is needed to improve financial outcomes. Carpena, Cole, Shapiro, and Zia (2012) found that low cognitive ability also contributes to reduced financial literacy. More than just knowing about numeracy, how to calculate interest, or find more favorable options for personal financial decisions, the study found that cognitive constraints are a limitation to improving financial literacy. Even when monetary incentives were introduced, there was no significant difference in financial performance.

Financial Literacy in the Military

Skimmyhorn (2016) searched for significant differences between military members and their civilian counterparts in household finances. He analyzed the differences between the populations presented in the FINRA 2009 and 2012 surveys. The research demonstrated that there are some significant differences between military members and civilian counterparts since military members have more types of savings accounts and more problematic credit card behaviors. Additionally, military members are equivalent to their peers in use of high interest alternative financial services such as payday loans and title loans. This study suggested that military members may be different from civilians in their financial behaviors, yet they provide a good opportunity to evaluate the financial behaviors of low to middle income American populations to understand effectiveness of public policy and training to educate citizens.

The young American military member is particularly susceptible to poor financial decisions due to a steady paycheck and low credit history. Military members with little income and understanding of personal finance are more susceptible to high interest debt (Montegary, 2015). There is a disproportionate presence of predatory lending businesses located strategically around military bases (Harris, 2011). Presumably, they are there because the population is ripe for their particular product and profits with an uninformed and impulsive young population. Gerri Walsh, President of the FINRA Investor Education Foundation, summarizes the importance of understanding financial literacy in the military when she states, "poor financial decisions by individuals in the military can undermine military readiness and morale" (Bumcrot et al., 2013, p. 1). The benchmark study for financial literacy in the military is the Financial Capability in the United States 2012 Report of Military Findings (Bumcrot et al., 2013). The study demonstrated the military members do better than the national norms for financial literacy, but there are some concerning statistics. First, only 53 percent of respondents indicated they could come up with $2,000 emergency funds immediately if needed (p. 8). Second, 57 percent of military respondents' carryover credit card balances and subsequently accrue high interest charges. Lastly, 38 percent of military homeowners reported being "underwater" in their mortgage situation, meaning they owe more for their home than it is worth. These negative statistics are concerning when these issues affect those who protect and serve our national defense.

A highlight of the Financial Capability in the United States 2012 Report of Military Findings (Bumcrot et al., 2013) is the analysis of different populations separated by age and experience. The survey revealed that experience and time in service had a positive influence on financial behaviors. The percentage of members who answered four or more questions out of five correct increased from 29 percent for 18-25 year-olds to 62 percent for over 36 year-olds.

Also, respondents who report finding difficulty paying bills and covering expenses decreases from 56 percent for ranks E1-E4 to 39 percent for E7-E9, a population that is generally separated by 10 to 12 years of experience. Additionally, the number of members who report having a self-directed retirement plan increases from 47 percent for E1-E4 to 77 percent for E7-E9. Home ownership, a good financial practice, increases from 36 percent for E1-E4 to 74 percent for E7-E9. Clearly, from these factors, it is apparent that experience has a positive influence on financial behaviors.

An important gap exists in the data regarding the early impact of financial experiences on military members. The issue addressed by the present study is if there is enough experience in the first two years to help young members make a wise decision about investment matching opportunities afforded by the Blended Retirement System. Presently, the training programs in the military for financial literacy have a long way to go (Higgins, 2017). Skimmyhorn (2016) did a post hoc evaluation of an Army personal finance training course on individual participation in the Thrift Savings Plan and found 24 percent of those who attended the course participated in TSP versus their non-attending counterparts who participated at 12 percent. These results persisted for the first two years of service. This provides evidence that some programs can be effective for improving military saving behaviors. The Skimmyhorn (2016) study differs from the present study since it does not measure the change for military members over the first two years, but rather if an education program given at the beginning of service creates persistent effects in retirement savings.

Literature Review Summary

Adult learning theory guides the understanding of financial literacy development in the present study. The assumption is that the primary factor affecting an individual's financial behavior is the value of life experience (Hogarth & Hilgert, 2002). Financial literacy research has painted a poor picture of American's and their management of personal finance. A combination of factors has contributed but those include the consumer economy, the lack of financial instruction, the missing link between financial knowledge and behavior, and the poor habits of spending instead of saving. Many Americans learn the difficult lessons of poor financial behaviors by experiencing the problems that come with debt and lack of saving (Bumcrot et al., 2013). These results are distressing in the era of the new Blended Retirement System for Air Force members. Without the requisite knowledge and behaviors to save, members potentially make a tremendous mistake when it comes to the new employer-matching program and miss a windfall of retirement income. The financial fallout for veterans is substantial, with recent research showing 30 percent of Iraq and Afghanistan veterans having difficulty managing personal finances by bouncing checks, exceeding credit limits, or falling to money frauds (Elbogen, Sullivan, Wolfe, Wagner, & Beckham, 2013). The present study contributes to the existing literature by quantifying and comparing the development of financial literacy of individuals over two years. This helps determine that life experiences have contributed significantly enough to positively affect financial literacy scores, but not enough to encourage members to make wise financial decisions about matching programs.

CHAPTER THREE: METHODS

Overview

Financial literacy is an abstract construct and there is not a standard accepted definition or instrument (Huston, 2010). However, financial literacy for individuals can be quantified and analyzed using validated instruments developed recently. This chapter describes the selected design of the study, the research questions, and the hypothesis, the Test for Financial Literacy instrument, the target population, and the selected analysis. The design of the study was specifically chosen to evaluate the financial literacy of young Air Force members in two separate career benchmarks, entry and two years of service. The procedures for administrating the instrument were designed to eliminate bias and provide a random sample of the population of interest. The chapter concludes with the justification for the independent samples *t*-test to draw conclusions.

Design

Most research designs in financial literacy are descriptive studies. Previous example studies include evaluations of financial literacy measures of college students (Avard et al., 2005), rural communities (Collazo, 2016), high school students (Mandell, 2008), the American population, and military personnel (Bumcrot et al., 2013). The Cochran (2010) study adopted a pretest/posttest model to evaluate the effectiveness of financial literacy instructions. The challenge with measuring financial literacy regarding retirement savings is that long-term investment strategies typically require decades of participation to produce desired results. A thorough analysis of personal discipline in retirement investment requires significant time and there are no longitudinal studies of financial literacy over a lifetime. Cross-sectional studies for different populations divided by age are not common in financial literacy studies, an exception being the FINRA military study (Bumcrot et al., 2013). Descriptive studies provide meaningful data and analysis which helps to understand variable economic and cultural conditions.

The present study was a descriptive cross-sectional design that examined the financial literacy of two populations at a point in time during their military careers. A descriptive design was appropriate because the research intended to assess an educational phenomenon in the population. Cross-sectional longitudinal design is defined as “a type of investigation in which changes in a population over time are studied by collecting data at one point in time, but from samples that vary in age or developmental stage” (Gall, Gall, & Borg, 2007, p. 637). The selected design was appropriate for the young military population because they are mostly homogenous in their financial income and lifestyles. They have a roughly equivalent pay structure, they are provided with food and lodging, and much of their income is discretionary for use on incidentals, personal spending, or saving. This allows the measured effect of time and training on financial literacy to be more valid since extraneous variables such as differential income, dining, and housing choices are eliminated. The study then evaluated how well members are protecting themselves from high-risk economic activities from their first paychecks to the two-year point.

Research Questions

RQ1: Is there a significant difference in financial literacy, as measured by the Test of Financial Literacy survey, between U.S. Air Force Airmen who are new to the service and those with two years time in service?

RQ2: Is there a significant difference in understanding of savings and investment, as measured by select questions on the Test of Financial Literacy, between U.S. Air Force Airmen who are new to the service and those with two years time in service?

The descriptive design of the study evaluates the dependent variables of the financial literacy score on the Test of Financial Literacy, and the selected questions, by survey between two groups. The independent variable in both research questions is time in service. There are many influences on a military member in their first two years of service. For most recruits, the Air Force gives them their first steady paycheck, they have access to many consumer products on the market, they may travel around the world, and some may purchase their first automobile. During this time, the value of experience with money should have an impact on the dependent variable as well as the value of any supplemental instruction and training in financial matters provided by the military. No quantitative analysis exists to answer the question: Is the two years of experience in personal finance in the military enough to be significantly different as measured by the Test of Financial Literacy instrument? Significance is measured by statistical procedures and the null hypothesis.

Hypotheses

$H_0$1: There is no statistically significant difference in a military members' financial literacy, as measured by the Test of Financial Literacy survey, between new Air Force recruits and those who have served for two years.

$H_0$2: There is no statistically significant difference in a military members' understanding of savings and investment, as measured by selected questions on the Test of Financial Literacy survey, between new Air Force recruits and those who have served for two years.

The Financial Capability in the United States (2013) study has described the relationship between time and financial knowledge for military members in the study. It was demonstrated that correct answers to financial literacy questions increased from ages 19-25 to the over 36 category. However, internal to the 19-25 year-old category there has been no measure to determine if substantial financial literacy education and experience has an effect. The hypothesis is that two years is not enough time to develop more thorough financial literacy, and conclusions and recommendations for the construct of the Blended Retirement System training can be made to help improve the program.

Participants and Setting

The participants in the study were from two different population groups. The first population consisted of new recruits in the age of 18-21 years old who are awaiting their start date at basic training. There is sometimes a lengthy process, up to a year, from the first time a recruit walks into a recruiting office to the point when they travel for basic training. This process usually takes months, and this population of those awaiting training made up the first population in the study. After initial enlistment, new Airman undergo eight and half weeks of training in a controlled environment upon entry in the Air Force. The rigors of basic training may induce poor results on the measurement, so the population chosen was taken from those awaiting basic training through the Air Force Recruiting Service. New recruits who had more than two years of civilian or college experience were excluded since their financial literacy may have developed during this critical period of time while they had work or college studies, or financial rigors may have contributed to their enlistment. The recent high school graduate, within about two years, was the target population and provided a baseline for evaluation of the current Air Force training in financial literacy. In addition, this population provides a reference point for the baseline high school graduate performance on the Test of Financial Literacy for comparison with other studies. Prior to basic training, there is no financial literacy instruction for new recruits.

The second population was a convenience sample provided by various Air Force bases in Texas. This population is a convenience sample because it is more easily accessible to the researcher geographically. Several Air Force installations were chosen to participate including Laughlin Air Force Base (AFB), Randolph AFB, Goodfellow AFB, Lackland AFB, and Dyess

AFB. This varied base selection helped eliminate some location and mission bias to produce a more even sample. Each of these installations have different missions such as recruiting, command, pilot training, maintenance training, air mobility operations, and bomber operations. Only Airmen on their first assignment and who have served in a range of one year and ten months to two years and six months were selected. In addition, the population was limited to 20-23 year-olds who did not have more than two years of civilian or college life before joining the military. This provided an equivalent testing population to analyze the effect of two years of service in the military on financial literacy and meets the intended design of cross-sectional quantitative research. This population has presumably experienced exposure to market forces, military education, financial institutions, and enough time to learn about personal finance through experience compared the first population.

Gender and race for the populations are analyzed for significant differences and compared to Air Force demographics to ensure normality. Also, some additional questions are added to the survey to provide a better understanding of debt accrual, high risk loan activity, and whether an emergency savings of $1,000 is available (Appendix D). These behaviors of each population supplement the research questions to provide a reference point for further discussion.

A sample size of 100 ($N = 100$) was targeted for the minimum number to achieve a medium effect size with a statistical power of .7 when using the independent samples *t*-test (Gall et al, 2007). When the survey window closed, 160 survey responses had been collected. Of those, 20 were too old or too young for the original parameters of the study, seven skipped too many questions or quit in the middle of the survey (more than 10 skipped), six were between 2 months and 22 months in service, and four surveys were finished in such a low time (under five minutes) to be considered invalid compared to the average completion time of 20 minutes. The end result yielded 123 sampled participants who met desired criteria, 95 new recruits and 28 two-year Airmen. There is a lopsided level of participation with 95 recruits and 28 two-year Airmen. This is due in part to inviting approximately 2500 new recruits through Air Force Recruiting Service versus inviting 738 two-year members to participate. The overall result yielded a nearly equal volunteer rate of approximately 4% in both target populations.

The survey setting varied between the populations. To ensure fidelity and to eliminate bias or errant data, new recruits were given instructions and a consent form from their recruiters who acted as proctor, then members completed the survey via weblink. The consent form is provided in Appendix B and the transcript used by the recruiter is provided in the Appendix C. Two-year airmen were identified by the personnel center managing each base and were invited via direct email to their work email address with the consent form (Appendix B) attached. The email invitation is provided in Appendix E. The Airman and Family Readiness Center at each installation, whose mission is to help educate airmen on their financial literacy, was the official host of the survey at each participating base.

Instrumentation

Many instruments have been created to measure financial literacy. Huston (2010) evaluated 52 different studies and their financial literacy assessments. Among the many different financial studies, few have completed reliability and validity tests. Two instruments provide statistical validation and reliability analysis for measuring financial literacy. The first is the Jump$tart survey of financial literacy produced by Dr. Lewis Mandell (2008) of the University of Buffalo. Moten (2011) utilized this survey to assess high school students' financial literacy scores based on ethnicities and income levels. Gilligan (2012) used the Mandell (2008) survey to evaluate financial literacy among California college students. Lucey (2005) evaluated the Mandell for internal consistency and validation. The survey has four subscales of Income, Money Management, Savings and Investment, and Spending and Credit. The survey consists of two parts. Thirty questions are in a multiple-choice format to test financial knowledge. The questions have a mandatory answer, so there is no option for selecting "I don't know." Another 17 questions from the Jump$tart survey are for demographics and classification. The Jump$tart survey has several iterations, and the only validity testing was accomplished by Dr. Lucey (2005) on the 1998 and 2000 versions of the test. Due to the age of the instrument and the changes in financial education in the last 17 years, it was determined that a more recent instrument would be more suitable to this study.

The instrument selected for this study is the Test of Financial Literacy (TFL) produced by William B. Walstad and Ken Rebeck (2016). Professor Walstad granted permission for the use of the survey in the completed study and correspondence is included in Appendix A. The instrument is designed to evaluate a high school senior's financial literacy education based on the *National Standards for Financial Literacy*, which focuses on six distinct areas: (1) earning an income; (2) buying goods and services; (3) saving; (4) using credit; (5) financial investing; and (6) protecting and insuring financial assets (Walstad & Rebeck, 2017). To measure the knowledge of the standards the TFL uses 45 multiple-choice questions. Each question has a mandatory response, so there is no option for "I don't know." The instrument was evaluated by administering the test to 1,218 students and an analysis of the reliability was performed using Cronbach's Alpha resulting in a score of 0.87 (Walstad & Rebeck, 2017). This result demonstrates good internal consistency and is reliable for assessing knowledge of personal finance. The validity of the TFL was measured by analyzing the difference between students who had some financial education and those who had not. The validity test revealed that those who reported some financial education had an average score that was 3.12 points higher. Validity testing demonstrates that the TFL is effective for measuring an individual's financial literacy. The TFL also shows that financial literacy is expected to improve when some external education or experience produces learning.

The second research question looks specifically at saving and investing. Walstad and Rebeck (2016) designed the TFL to assess six national standards, of which two are saving and investing. Although no categorization of questions has been provided to measure each of the standards, one can extrapolate questions relating to saving and investing from the question bank. For the present quantitative study, a subset measurement of 11 selected questions from the TFL is analyzed to see if there are significant changes in the two populations. The questions all pertain to savings and investment concepts. The subset consists of questions 14, 16, 17, 18, 29, 30, 31, 32, 33, 34, and 36 from the TFL. Question 14 measures understanding of the effect of impulse spending on long term savings. Question 16 measures understanding of savings at banks. Questions 17 and 18 measure understanding of 401(k) programs and retirement savings. Questions 29-34 and 36 measure understanding of investments including stocks and bonds. The strength of the results from measuring using this subset is diminished since no official testing and validity has been accomplished on the selected questions.

The TFL is extremely useful for measuring the difference in financial knowledge of the two sample populations. The results of the TFL demonstrate if there is significant development in financial literacy simply based on two years of time in service. Since time and experience are independently studied, there is an expectation that there should be an overall increase in financial literacy as measured by the test, which has been demonstrated by other studies which looked at larger amounts of time (Bumcrot et al., 2013).

Since the TFL only includes the financial knowledge aspect of financial literacy and does not include the financial capability of individuals, more in-depth questions are needed to help make recommendations for future Air Force education programs. The present study adds four questions to better assess changes in financial capability, which is the application of financial knowledge. These questions include:

1. Have you ever used a payday loan or cash advance?
2. Do you have a minimum of $1,000 immediately available for emergencies?
3. Including car loans, school loans, payday loans, and credit cards, what is your approximate amount of debt?
    a. $0 to $1,000
    b. $1,001 to $5,000
    c. $5,001 to $15,000
    d. more than $15,001

The first question measures a negative financial behavior, using a high interest loan product to acquire money. Carrell and Zinman (2014) comment on the phenomenon of payday loan proximity to military installations and found evidence to support the hypothesis that utilizing these sources for money produces distractions to readiness and productivity. By asking the question in the present study, the survey allows for deeper analysis of results on the TFL for members who utilize payday loans. High interest loans demonstrate a lack of budgeting skills and planning, necessary for the practice of good financial decisions.

The second question addresses the financial capability of individuals in order to learn how many can withstand an unexpected cost of at least $1,000. Bumcrot (2013) uses the $1,000 measurement as a standard for unexpected expenses in the military. Dave Ramsay (2017) recommends the $1,000 emergency fund as the first step to financial freedom. A member who has the depth of resources to pay unexpected expenses up to $1,000 is more likely to be in a position to make savings contributions, as indicated by the FINRA study (Bumcrot et al., 2013).

The third is simply a measure of debt which is useful to determine if average debt increases, decreases, or stays the same after two years. It is expected that recent high school graduates will have lower indebtedness due to their lack of credit. These three questions have not been evaluated or validated, and therefore limit their addition to the strength of the study. They do help provide a reference point to understanding the common pitfalls of poor application of financial knowledge, which is a key component of financial literacy.

Procedures

First, a thorough literature review was completed to understand the current climate of financial literacy for American high school students who are entering the military. Next, the research proposal was reviewed, defended, and approved by the dissertation committee, then forwarded to an Institutional Review Board (IRB) for provisional approval (Appendix F). The research proposal was submitted to the Headquarters USAF Human Resources Protection Office (HRPO) (Appendix G). They act as the gatekeeper for all studies in the Air Force to ensure ethical guidelines are followed for Air Force studies. The wing commander at each participating installation provided email approval to complete the survey for their two year airmen. Only one base declined to participate of those invited, and it was due to numerous other studies already taking place at the installation. An email describing the research was sent to the commanders of all the bases and a request for assistance in generating the sample population was submitted. New recruits were requested to be sampled through the Air Force Recruiting Service. The basic military training new recruits were inaccessible during any part of their training due to limitations on their time and a regulation stating research studies must be directly related to basic military training. After all permissions were secured, two-year members were invited to participate by email. New recruits were invited by recruiters via the proctor letter and consent form in the appendices. The sample consisted of completely volunteer participants.

The survey began with brief instructions and statement to complete the survey in entirety and without assistance from outside sources. Consent was acquired through the participant's letter provided in Appendix B, no signature was required. Demographics were collected and analyzed for homogeneity of the participants across the target population to ensure the results are not skewed by a location, gender, or racial differences.

Data Analysis

The surveys are graded on a dichotomous scale for each question. Each right answer counts as one; each incorrect answer is counted as a zero. Overall participant scores are cumulative for the 45-question general knowledge score yielding the dependent variable ratio scale results from 0 to 45. For the second research question, the selected 11 questions are evaluated the same way. Each participant is given a score from 0 to 11 for the second dependent variable of the study. The independent variable of time in service divides the samples. The descriptive statistics of gender and race are evaluated to ensure a reasonable random population representative of the Air Force is collected in both samples. Statistics such as number of female participants and racial makeup of the groups are evaluated against Air Force demographics. Assumption testing includes Kolmogorav-Smirov tests for normality, along with histograms. Levene's test of Equality of Variance was used to test the tenability of the assumption of homogeneity of variance. The data for each group is screened for outliers using a Box and Whisker plot and *z* score. Extreme outliers in each group with *z* scores in excess of 3.3 in absolute value are eliminated from the sample.

When all the assumption tests are completed the two groups are evaluated using the independent samples *t*-test, two-tailed, at the .05 alpha level. The result evaluates whether the mean scores of the two populations have statistically different results, providing evidence for a difference in the two populations. Cohen's *d* is calculated to determine the effect size.

CHAPTER FOUR: FINDINGS

Overview

Surveys were collected during September and October of 2018 via an online survey tool called Survey Monkey. An estimated 2,500 new recruits and exactly 738 two year airmen were invited to voluntarily participate yielding 123 qualifying samples and approximately a 4% participation rate among both populations. This section includes the results from SPSS used to analyze the data collected. Steps were followed to evaluate results in the following order: the checks for representative samples based on gender and race, checking *z* scores for outlying results, the assumption tests for normality and equality of variances, and finally the independent samples *t*-test for the two null hypotheses posed by the study. Other interesting data based on the additional questions posed by the survey are included for informational purposes and to help contribute to the findings and questions for future research.

Research Questions

RQ1: Is there a significant difference in financial literacy, as measured by the Test of Financial Literacy survey, between U.S. Air Force Airmen who are new to the service and those with two years time in service?

RQ2: Is there a significant difference in understanding of savings and investment, as measured by select questions on the Test of Financial Literacy, between U.S. Air Force Airmen who are new to the service and those with two years time in service?

Null Hypotheses

$H_0$1: There is no statistically significant difference in a military members' financial literacy, as measured by the Test of Financial Literacy survey, between new Air Force recruits and those who have served for two years.

$H_0$2: There is no statistically significant difference in a military members' understanding of savings and investment, as measured by selected questions on the Test of Financial Literacy survey, between new Air Force recruits and those who have served for two years.

Descriptive Statistics

Analysis of the demographic data for members surveyed is compared to Air Force demographic data to ensure a similar cross section of the inferred population was collected. Air Force demographic data comes from the Air Force Personnel Center (2018) website and is public domain. The gender distribution of the U.S. Air Force includes a higher population of men with 79.9% male and approximately 20.1% female. Surveys were collected from 91 male (74%) and 32 female (26%) participants and are displayed in Table 1. The racial distribution of the U.S. Air Force is 72% White, 14% Black or African American, 3.9% Asian, 0.7% American Indian / Native Alaskan, 1.1% Native Hawaiian / Other Pacific Islander, and 8.2% are Mixed/Other. Surveys were collected from 87 White (70.7%), 16 Black or African American (13%), 4 Asian (3.3%), 1 American Indian or Alaska native (0.8%), 7 Hispanic (5.7%), and 8 Mixed/Other (6.5%), and is displayed in Table 2 along with a comparison to USAF demographic. The percentages are within 6% for gender and 5% for racial identity, so one can reasonably assume that the participants of this survey represent a cross section of the Air Force population as a whole. Reported ages of all 123 samples either fell into the 18-21 year old for new recruits, and 19-23 year old for all two year airmen.

Table 1.

Gender Description of the Sampled Populations Compared to US Air Force

Gender	Frequency (*n*)	Percentage	US Air Force Percent
Male	91	73.9	80.0
Female	32	26.1	20.0
Total	123		

Table 2.

Racial Description of the Sampled Population and US Air Force

Race/Ethnicity	Frequency (*n*)	Percent	US Air Force Percent
American Indian or Alaskan Native	1	0.8	0.7
Asian	4	3.3	3.9
Black or African American	16	13.0	14.0
Hispanic	7	5.7	Not reported
White/Caucasian	87	70.7	72
Mixed/Other	8	6.5	8.2
Total	123		

Results

Assumption Testing

Data was screened using *z*-scores for both results from the Test of Financial Literacy and for the 11 selected questions. The lowest *z*-score for the collected Test of Financial Literacy results was -2.38 (11 correct) and the highest 2.19 (43 correct) indicating no results above our 3.3 absolute threshold and therefore no extreme outliers for removal. Using the same standard for the 11 selected questions the lowest *z*-score was -2.33 (1 correct) and the highest was 2.23

(11 correct), and therefore all surveys were accepted in the final results and none were eliminated as outliers.

Kolmogorav-Smirov tests for normality are used to evaluate the assumption of normal distribution of the data (Green & Salkind, 2014). The Test of Financial Literacy results for the Kolmogorav-Smirov test of normality had a significance of .20 which is above the .05 level and therefore the assumption of normality is tenable. A histogram is included at Figure 2 further demonstrating the normal distribution of the survey results.

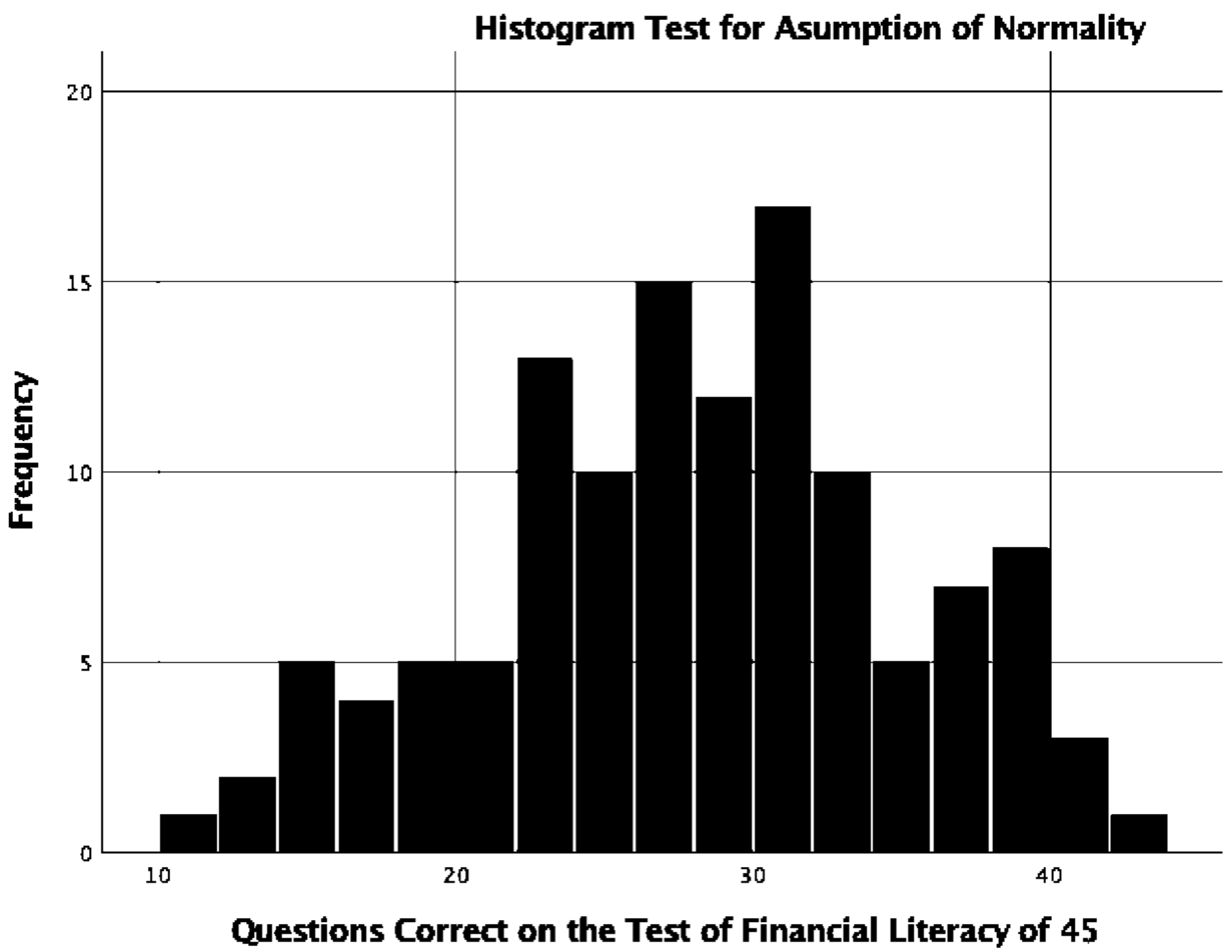

Figure 2. Histogram of results of the Test of Financial Literacy.

The selected questions on savings and investment results for the Kolmogorav-Smirov test of normality had a significance of less than .01, and therefore there is a risk to loss of robustness to the independent samples *t*-test if normality is assumed. Looking more closely at the histogram results (Figure 3) demonstrates the unique distribution of results with a low point in the middle performance of six and seven correct. The significance of the Kolmogorav-Smirov test for the selected questions does not indicate any thick tailed or heavily skewed distribution of results, but rather the appearance of two bumps in the data distributed evenly around the middle. For this study, the research proceeds assuming normality and used an independent samples *t*-test to test the hypothesis. According to Green and Salkind (2014), when using a moderate sample size "the independent samples *t*-test may yield reasonably accurate for *p* values when the normality assumption is violated" (p. 157), and a reduction of power of this test is accepted as a limitation.

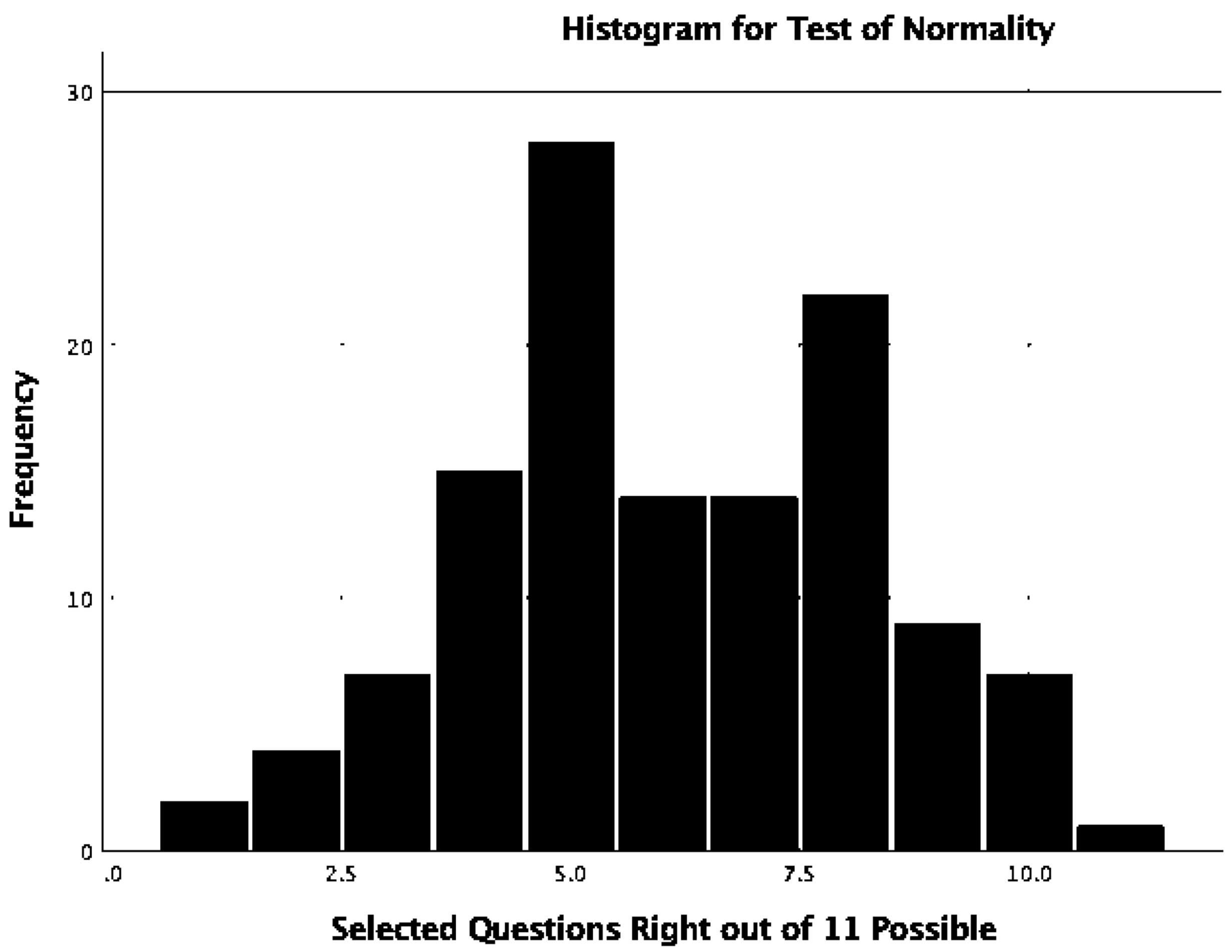

Figure 3. Histogram of results of the selected questions over savings and investment.

Next, the assumption testing for the equality of variances is examined using Levene's Test for Equality of Variances. For the Test of Financial Literacy results the equality of variances is tenable, F (1,121) = .001, p = .928, since Levene's Test was not significant (p > .05). For the savings and investment questions the equality of variances is also tenable, F (1,121) = .53, p = .468, since Levene's Test was not significant (p > .05). The final assumption for an independent samples *t*-test is the random sampling from the population, which was the method selected for the survey design. There is some risk to degradation of the strength of the study when using volunteers, for example an individual who is not competent in their financial knowledge may have opted out of the study as evidenced by three incomplete surveys submitted, thus skewing the data toward individuals who are confident and knowledgeable in their financial literacy. There is no way to eliminate the volunteer bias, but since both populations came from volunteers the researcher assumes random population sampling from both of these groups.

Hypotheses

An independent samples *t*-test was conducted to evaluate the hypothesis that there is no statistically significant difference between new recruits to the US Air Force who are between ages of 18-21 and Airmen who have been in the Air Force for approximately two years between ages of 19-23 as measured by the Test of Financial Literacy. The test was significant at the p < .05 level, t(121) = 3.31, p = .001, so the researcher is able to reject the null hypothesis. Two year members answered approximately five more questions correctly (M = 31.36, SD = 6.77) than their new recruit counterparts (M = 26.58, SD = 6.70) on the 45 question Test of Financial Literacy. The 95% confidence interval for the differences in means ranged from 7.64 to 1.92. Cohen's d for the test is .71 indicating a large effect size. Figure 4 shows the results of the distribution of the groups on a boxplot.

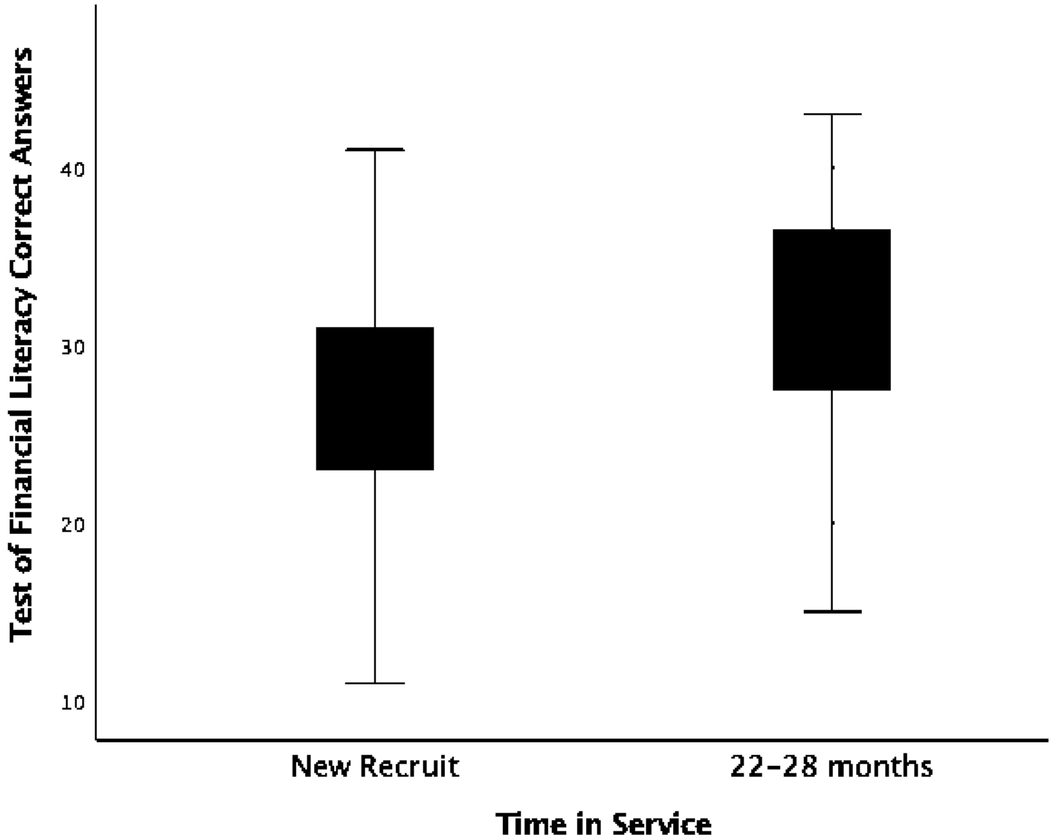

Figure 4. Distributions of scores on the Test of Financial Literacy by time in service.

An independent samples *t*-test was conducted to evaluate the hypothesis that there is no statistically significant difference between new recruits to the US Air Force who are between ages of 18-21 and Airmen who have been in the Air Force for approximately two years between ages of 19-23 as measured by 11 selected questions covering savings and investment from the Test of Financial Literacy. The test was significant at the $p < .05$ level, $t(121) = 2.20$, $p = .03$, so the researcher is able to reject the null hypothesis. Two-year members answered approximately one more question correctly ($M = 6.89$, $SD = 2.27$) than their new recruit counterparts ($M = 5.87$, $SD = 2.12$) on the 11 selected questions from the Test of Financial Literacy. The 95% confidence interval for the differences in means ranged from 1.94 to .10. Cohen's *d* for the test is .46 indicating a medium effect size. Figure 5 shows the results of the distribution of the groups on a boxplot.

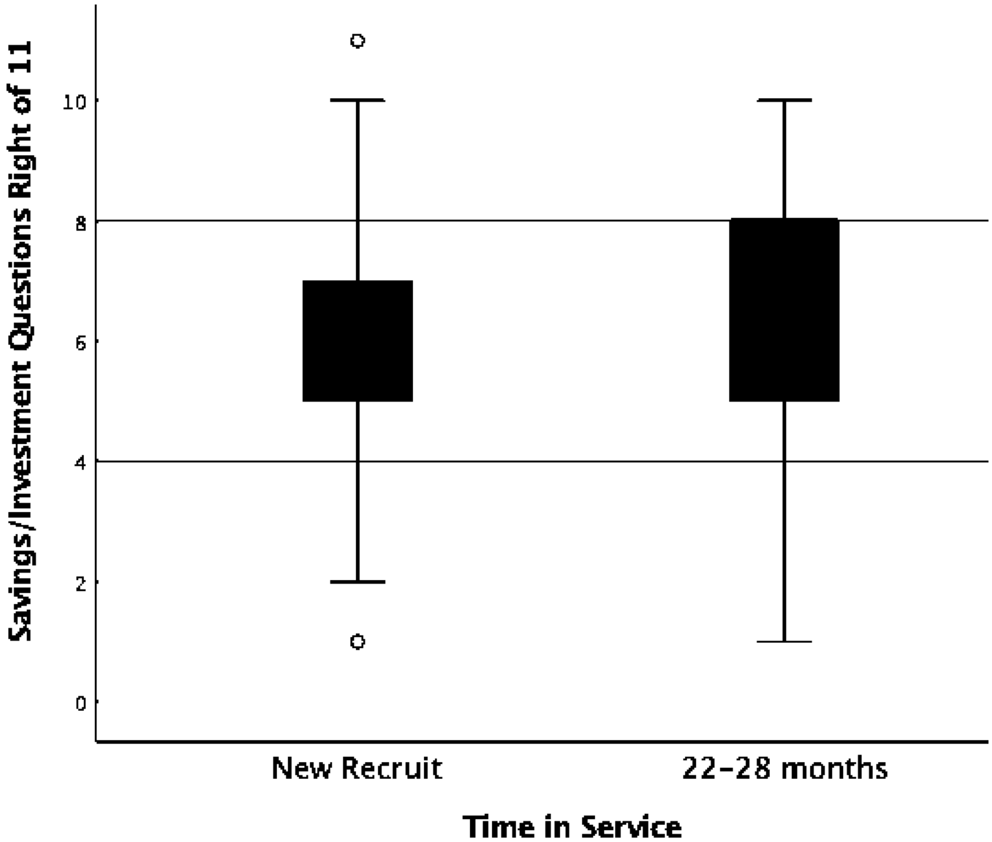

Figure 5. Distributions of scores on 11 selected questions from the Test of Financial Literacy by time in service.

Additional Findings

Results of the additional questions yield some interesting data. The survey showed 42% of new recruits report they have $1,000 available for emergency compared to 75% of two year airmen. One person in each population said they had used a high interest loan such as payday loan or cash advance. Accumulated debt reported had a large difference between the two populations. The survey showed 85% of new recruits reported having less than $1,000 in credit card, school, or automobile debt, versus 40% in the two year airmen group. Approximately 30% of two year airmen reported debt in between $5,001-$15,000 and 30% of the 28 surveyed carried reported debt in excess of $15,001.

More data is available by examining the questions that were most frequently missed. The top 10 missed questions by all participants are included in Figure 6, including the percentage of correct answers. Of the top most missed questions, five of the top seven have to do with investing. The third most missed is related to the benefits of education compared to costs of education, and the last three of the top ten most missed questions have to do with insurance. The types of questions surveyors had the most knowledge about included the subjects of earning an income, buying goods and services, and using credit.

Question Ranking

QUESTIONS (45)	DIFFICULTY	AVERAGE SCORE
Q41 Which of the following would cause the current value of bonds to increase?	1	29%
Q38 Suppose a corporation issues two bonds. One bond matures in a year. The other bond matures in ten years. The bond maturing in one year is expected to:	2	35%
Q9 Sadie is a high school graduate who has decided to go to college next year. From a financial decision-making perspective, she has concluded that the	3	37%
Q37 Stock A has been issued by a new corporation. Stock B is considered a "blue chip" stock. Which is true about these two stocks?	4	39%
Q48 Which of the following actions by insurance companies encourage policyholders to take fewer risks once they are insured?	5	39%
Q42 One way the government helps promote well-functioning financial markets is to ensure investors have:	6	44%
Q43 The primary responsibility of the Securities and Exchange Com-mission (SEC) is to:	7	46%
Q46 Kayla has a low tolerance for taking risks because she wants to protect her growing family. She would be expected to choose an insurance policy that has	8	47%
Q50 Which type of auto insurance would pay for the repair of a cracked windshield caused by a rock hitting it?	8	47%
Q44 Paul paid for auto insurance every year but never had an acci-dent or filed a claim. Did he get anything of value for the money he paid?	10	49%

Figure 6. Top 10 most frequently missed questions on the Test of Financial Literacy by all participants.

CHAPTER FIVE: CONCLUSIONS

Overview

The study examined the progression of financial literacy in the first two years of Air Force service with an emphasis on readiness of young military members to make a retirement matching decision with the new Blended Retirement System. First, some highlights linking the research to other similar projects is discussed, as well as some important data learned from the findings. Next some implications are made to the education and training process based on the results of the research project using Knowles adult learning theory as the framework for ongoing instructional efforts. Limitations to the study are discussed, and the chapter concludes with recommendations for future financial literacy research.

Discussion

The purpose of this study is to determine the difference in financial literacy, as measured by the Test of Financial Literacy, between a new recruit and a service member with two years of experience in the U.S. Air Force. The study provided more information to conversations about readiness for the new Department of Defense Blended Retirement System, and whether a young enlisted member in the Air Force has the requisite knowledge to make a good decision about long term retirement investing and matching programs. There are several points to consider from the results of the study, including analyzing the statistical comparisons and the additional data that was collected.

The results show that recruits to the Air Force and the two year members continue a steady incline in performance on the Test of Financial Literacy. When taking the results of this study and comparing them to the original study, there is a steady increase in performance on the Test of Financial Literacy over the years for young adults. The mean for 12th grade students when the Test of Financial Literacy was validated was M = 24.12 with instruction, and M =

20.92 without (Walstad & Rebeck, 2017). The mean for our two populations were $M = 26.58$ for new recruits and $M = 31.36$ for two year members. This stairstep increase in financial literacy is likely caused by increased experience level of managing money. Most high school students still have the support of their home in matters of finance, and therefore are deprived of knowledge because there is no application or need to know. The newest Air Force members have increased exposure to market forces, as demonstrated by their increased reported debt, and their performance on the Test of Financial Literacy. The results still highlight a problem in the education of our high school youth about personal finance. Although there is a slight difference of two points between new recruits and the 12th grade students, the test score averages 26 correct which is 55% correct demonstrating a considerable lack of knowledge. Therefore, this study contributes to the already existing body of knowledge that expresses concern about how prepared academically American youth are to enter the marketplace and manage their own financial outcomes.

The improvement of scores on the test over time demonstrate a fundamental tenet of Knowles adult learning theory (Knowles et al., 2005), life experiences are a great contributor to a young person's financial literacy. For example, the study investigated how much debt each person reported. The data that indicates a majority of Airmen enter the Air Force with low debt, 85% reported less than $1,000 in debt compared to 39% of their two year counterparts. The more concerning part is that sometime between the recruiting and the two year point, 61% had acquired debt in excess of $5,000 and of those half had accrued debt in excess of $15,000. This demonstrates a life experience of exposure to market forces and would generally lead to a greater understanding of financial matters regarding debt and purchasing. The experience of managing debt is likely a significant contributor to the increased performance on the Test of Financial Literacy. However, the news is not all that good, since the annual salary of an Airman First

Class is between \$22,630 and \$25,510 (Federal Pay, 2018). That means some of the members who were surveyed have almost an entire year's pay of debt. Other studies indicate that this trend is mirrored in the American culture, young adults enter into the marketplace and without substantial income to speak of they rely on debt to make substantial purchases (Avard et al., 2005). A good point to mention about the debt, only two surveyed members of the 123 reported ever using a high interest payday loan showing that a vast majority of the populations are avoiding forms of high interest debt.

Another question on the survey examined whether an individual had at least \$1,000 for emergency spending. This is considered by some financial experts to be the first step to financial healthiness. The data showed a positive trend with 42% of new recruits having \$1,000 available for emergency use compared to 75% of their two year counterparts. This is far from ideal since one fourth of the two year airmen would not be able to draw from their own resources in an emergency, which could contribute to an increase of debt when unexpected financial costs are encountered.

Examining the research questions, both of the tests were significant indicating a positive difference in financial literacy between new recruits and two year airmen. It is worth noting that the strength of the complete Test of Financial Literacy was stronger than the selected questions on savings and investment. Although both tests were significant at the $p < .05$ level, the Test of Financial Literacy was $p = .001$ and the selected questions was $p = .03$. Also, the effect size from Cohen's *d* demonstrated a large effect size for the full test, and medium effect size for the selected questions. This data is further enforced by looking at the most frequently missed questions on the survey, of which five of the top seven were in regard to investing. These results seem to indicate a lower knowledge about savings and investment compared to the other topics of using credit, earning income, and insurance. It is estimated that these questions were missed the most because of the lack of experience in dealing with investing in real life. These are young adults who have just begun to earn and be members of the marketplace. They are likely not jumping into the investment arena because they have other objectives for how to spend their money and they are not thinking about retirement yet. This does not display a readiness for the new Blended Retirement System for some members. These young adults require this knowledge to avoid the mistake of missing the chance to invest while they are young. The most important part of a long term investment program is the opportunity to let compound interest grow the account. Experience cannot teach this lesson; only knowledge and discipline can help someone maximize the benefit of long term investing. If these young military members do not possess the requisite knowledge about investing, it is likely they are not prepared to make long term financial decisions about matching programs.

Implications

The study is based on the framework of the six tenets of Knowles (2005) adult learning theory, or andragogy, and the results contribute to the validity of the theory. The six tenets are reason to learn, self-concept, value of experience, readiness to learn, task and problem centered, and intrinsic motivation. The study demonstrates that life experiences have contributed to the statistically significant increase in financial literacy in our two year population. The results are not so strong for the selected questions on savings and investment, indicating there is a need to increase young military member's knowledge so they are prepared to make a wise financial decision with the Blended Retirement System and the matching program. Simply put, training programs need to ensure new members are ready to make an informed decision when they arrive at the two year point.

Therefore, a new education and training program should be devised to help create the environment where the members can make a knowledgeable decision for what financial package works best for them. When looking at Knowles' (2005) six tenets to design a training program, the training program cannot be solely based on experience. The market is fickle, and in the short term saving and investing in small pieces can seem futile and insignificant. Some other aspects of experience can be utilized, such as simulations and retirement calculators that let young airmen evaluate the "what if" scenarios. However, these should not be the sole source of learning. Other tenets should be employed to help design a program that is effective in increasing financial literacy.

First, an instructional objective should be to inspire a reason to learn within the Airmen. Perhaps describing an ideal example of someone who maximizes the matching program along a career with normal promotion and progression, as well as a market that remains consistent with historical performance. Then describing an example of the financial outcome of someone who does not participate until 10 years into their career but experiences otherwise identical career progression. Clearly, the former will have substantially more financial capability in the retirement years than the latter. By making a comparison of the two outcomes and showing the enormity of difference, the result would be to both inspire some intrinsic motivation and a reason to learn. Whatever method is used to deliver the knowledge material, the instructional material needs to meet the prerequisite of inspiring the reason to learn to be most successful. Military members learn their primary skills because they use them in their mission, and their job performance relies on a direct application to hands on work. When it comes to saving, matching, and investing, they may not be able to see the direct relation to long term goals. Therefore, inspiring the reason for learning needs to be accomplished before any material is discussed to ensure retention of material.

Additionally, the training must inspire the members to have ownership, or what andragogy calls inspiring the self-concept. An example of how to do this is to explain to members how they are about to make a financial decision that can make the difference between a wealthy and comfortable retirement, or one that is uncertain and may require continued work into old age. Another way to inspire self-concept is to directly ask members to share what their plans and goals for retirement to be. Many young adults do not think about retirement at such young ages, and our data indicates that some two year airmen are in debt, demonstrating a negative financial trend. They may be able to identify with this version of ownership, that of owning a substantial debt. Perhaps asking those who have some debt how it would feel to live without the debt, and letting them own that feeling for a little while will inspire a healthy change. The objective of the instruction would be to inspire the ownership of the decision to match or not to match, and be aware of the consequences of both choices. By inspiring the self-concept, the members will be more likely to absorb content and make a positive financial decision.

The new training program needs to be relevant which will invigorate a member's readiness to learn, another tenet of andragogy. Relevance is essential to adult learners' acquisition of knowledge. One way to make the training relevant is to bring humor and current events into the presentation method. Using video or dynamic instruction that is engaging and entertaining is a sure way to stay relevant with a young adult crowd. The military has some computer based training modules that are required on an annual basis, and some members simply click through them as fast as possible because the training misses the relevancy piece. It would be irrelevant to create a new computer only based curriculum to instruct young military members on the decisions with the Blended Retirement System. Such a training design would fold into the mix of other required training and miss the desired effect. A better way would be to instruct them at major milestones, such as promotions, change of station, the two year point, or when a bonus is paid. These financial milestones make the training more relevant to the member since they have just experienced a financial change. They will be more likely to learn during the instruction because the topic has immediate application to their life. In any case, the training should be designed in such a way to engage members where they are in the course of their financial experiences and tie the decisions they need to make back to their lives, thus increasing their readiness to learn.

The training should be task and problem centered, another tenet of andragogy. An example would be to include an assessment of learning such as a pretest/posttest. At the beginning, test their knowledge of some financial concepts and provide immediate feedback on their performance. This allows the instructional model to be tailored to areas where help is needed, as well as provide some intrinsic motivation to absorb the material. Another example would be to provide some tasks, such as computer simulation of investment on the stock market. The objective of these types of activities is to keep the training task and problem centered. By focusing on the problem of making wise financial decisions, the members are more likely to learn the material and increase their financial literacy.

Lastly, all of the above techniques have the collateral effect of increasing intrinsic motivation. This adult learning concept is perhaps the most important when experience is not available to teach lessons. As discussed, there is no opportunity to learn from experience in retirement investing since missed opportunities while young are difficult to overcome in matching programs. Therefore, inspiring intrinsic motivation for members is the essential ingredient in any education program about the Blended Retirement System. Intrinsic motivation has profound effect because the learning becomes more permanent. Members will do their own research and use their own time to investigate possible outcomes. They will begin to discuss financial matters with friends, colleagues, and family as their interest in the subject is peaked. Ultimately, they will be in the best position to decide what is right for their own personal financial objectives and know the potential outcomes of financial decisions. This is the ideal situation, so no one will end up toward the end of their career and say, "If I only knew."

The single greatest implication of the present study is to demonstrate that Knowles andragogy is a reliable adult learning theory. This is demonstrated in the overall increase in financial literacy between two groups, likely due to the experience of engaging in the marketplace. With a robust education and training program that focuses specifically on the savings and investing part of the Blended Retirement System and is designed around the other tenets of andragogy, there is a greater likelihood that the instruction will be successful.

Limitations

Every effort was made to reduce the number of limitations that affect the validity of the study. However, no representative sample could ever be implied to an entire population and some sampling error may have been introduced through the method employed. Originally, the survey was designed to be done in person by proctor to ensure integrity of the results. This was the case for all the 95 recruits who were surveyed. They were given a proctored survey by their recruiters after receiving the instructions at Appendix C. The two year members were originally invited to complete a proctored survey, but participation levels were too low to collect results since a voluntary trip to an office was required and some of the participating commanders limited study participation to outside normal duty hours. This limitation forced a method change during the survey period for two year members to be sampled without proctor and to complete the survey via a web link from any computer or mobile device. This exposed the results to the potential for better performance due to members having access to others or external agencies during the test. One way to control monitor the results for this violation of test integrity was to analyze the time used to complete the survey. The average time was 23 minutes, and no significant deviations (more than an hour) were noted in any population. This variable sampling method limitation was known and accepted as part of the study, and no significant outliers were discovered that indicated anyone used outside sources to complete the test.

Another limitation was the geographic locations of the bases surveyed, being completely in Texas. This may have introduced some geographic bias to the data because of the differences in cost of living at other locations. Texas bases were chosen in case any transportation was required to instruct proctors or collect results. Only four installations were chosen due to the difficulty of obtaining permission from each installation commander. Many of them replied to original survey requests with requests for information and more installations would have required more time. This limitation also reduced the number of two year members who were surveyed. The original design was to get 50 members from the two year population, but the survey ended with only 28 participating. This was determined to be enough in order to achieve a medium effect size, and the survey progressed.

Internal validity has a limitation because only one measurement was used to collect data for financial literacy. There are many other ways to measure financial literacy, as described in the Huston (2010) study. This instrument was selected because of its recency and relevancy to young adults. Another limitation of the test is regarding the subscale of savings and investment. The Test of Financial Literacy was designed to include this subscale, but the questions were not previously identified to specifically measure these important items. The researcher chose the 11-question subscale based on the content of the material, but no validity or reliability testing exists for the subscale. This is an internal limitation of the test, but the risk of inaccurate results due to the selection of these questions is minimal.

Finally, although the analysis of debt in this particular survey was sufficient to make some generalizations, it was insufficient to make a complete understanding of how young Air Force members accrue different kinds of debt. The survey asked one question about how much debt each participant had in car loans, school loans, credit cards, and payday loans. It is accepted that school and car loans are in a different level of risk than credit card and payday loans. A more thorough analysis could have been done by splitting the question into two parts, or simply evaluating how much consumer debt on credit cards each member carried. This would have allowed for more thorough analysis of the types of debt young Air Force members accrue.

Recommendations for Future Research

1. Expand the study of financial literacy across the other services. There is a possibility that the other services are instructing their members in financial literacy differently. Identifying differences could be beneficial to create best practices.
2. Financial literacy instruments should be expanded to include a more holistic understanding of an individual's financial literacy. The Test of Financial Literacy instrument is knowledge based, and the researcher wrote a few other questions which examined financial behaviors. A more thorough instrument could be designed that includes both financial knowledge and financial capability and presents a more holistic picture of a person's financial literacy.
3. A survey could be designed to examine financial differences between military members who take full advantage of the matching in the Blended Retirement System, and those who do not match. Examining their differences and what inspires their financial choices could be helpful to encourage more healthy financial decision making in future members.
4. Expand the survey of financial literacy to the five to ten year point of service to see if the rate of progression continues at a constant rate.
5. Expand the survey to include officers or members who are older to determine if significant differences exist in their financial behaviors.
6. Examine the types of debt young military members accrue within the first two years to determine if high risk, high interest debt accumulation is common and to what level.

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APPENDIX A

Approval to Use Test of Financial Literacy (Walstad & Rebeck, 2016)

Gmail

Michael Pontiff <mike.pontiff@gmail.com>

The TFL article

William Walstad <wwalstad1@unl.edu> Fri, Sep 22, 2017 at 12:50 PM
To: Michael Pontiff <mike.pontiff@gmail.com>

Michael

I see no problem with you using the TFL. Just give the proper citation for its use.

As for using a subset of questions on particular topics, you can do that, but it would up to you to justify what you have done.

Prof. Walstad

APPENDIX B

The Liberty University Institutional
Review Board has approved
this document for use from
4/23/2018 to --
Protocol # 3235.042318

CONSENT FORM

READINESS FOR BLENDED RETIREMENT: A DESCRIPTIVE ANALYSIS OF FINANCIAL LITERACY AMONG YOUNG AMERICAN MILITARY MEMBERS
Michael E. Pontiff
Liberty University
School of Education

You are invited to be in a research study of financial literacy, also called personal finance. You were selected as a possible participant because you are either a new recruit to the USAF in the age bracket of 18 to 21 years old, or because you have served in the USAF for approximately two years and are in the age bracket of 19 to 23 years old. Please read this form and ask any questions you may have before agreeing to be in the study.

Michael Pontiff, a doctoral candidate in the School of Education at Liberty University, is conducting this study.

Background Information: The purpose of this study is to determine the rate of progression in financial literacy among young military members.

Procedures: If you agree to be in this study, I would ask you to do the following things:

1. Answer some questions about your financial knowledge in a 45-question survey called the Test of Financial Literacy. (45 minutes)

Risks: The risks involved in this study are minimal, which means they are equal to the risks you would encounter in everyday life.

Benefits: Your participation will help shape an understanding of how much progression of financial literacy happens during the first two years of military service. The results could help shape the training and education military members receive. Also, you could grow in your desire to learn more about personal finances.

Participants should not expect to receive a direct benefit from taking part in this study.

Benefits to society include increased understanding of how financial literacy develops in young adults. Your participation will help shape an understanding of how much progression of financial literacy happens during the first two years of military service. The results could help shape the training and education military members receive. Also, you could grow in your desire to learn more about personal finances.

Compensation: Participants will not be compensated for participating in this study.

Confidentiality: The records of this study will be kept private. In any sort of report I might publish, I will not include any information that will make it possible to identify a subject. Research records will be stored securely, and only the researcher will have access to the records.

Survey responses will be anonymous. Data will be stored on a password locked computer and may be used in future presentations. After three years, all electronic records will be deleted.

Voluntary Nature of the Study: Participation in this study is voluntary. Your decision whether or not to participate will not affect your current or future relations with Liberty University or your career in the USAF. If you decide to participate, you are free to not answer any question or withdraw at any time prior to submitting the survey without affecting those relationships.

How to Withdraw from the Study: If you choose to withdraw from the study, please exit the survey and close your internet browser (if applicable) or inform the proctor that you wish to discontinue your participation prior to submitting your study materials. Your responses will not be recorded or included in the study.

Contacts and Questions: The researcher conducting this study is Michael E. Pontiff. You may ask any questions you have now. If you have questions later, **you are encouraged** to contact him at 830-353-0928 or mpontiff@liberty.edu. You may also contact the researcher's faculty chair, Dr. Vance Pickard, vpickard@liberty.edu.

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher, **you are encouraged** to contact the Institutional Review Board, 1971 University Blvd., Green Hall Ste. 1887, Lynchburg, VA 24515 or email at irb@liberty.edu.

Please notify the researcher if you would like a copy of this information for your records.

Statement of Consent: I have read and understood the above information. I have asked questions and have received answers. I consent to participate in the study.

APPENDIX C

Proctor's Statement

To be read by the proctor administering the survey:

"Thank you for your participation in this survey. You are about to take the Test of Financial Literacy. It is designed to measure your knowledge of topics related to personal finance. The first questions are for demographics to ensure a random sample that closely resembles the Air Force demographics. There are three questions related to your personal finances and will help provide some additional data to the research. The Test of Financial Literacy has 45 questions, of which there is exactly one correct answer. If you do not know the answer, please make your best guess. Please answer all questions on the survey. If at any time you need a break, you may request one from the proctor. The proctor is not allowed to assist you on the test in any way. Please give the survey your best effort to allow for accurate results and analysis. You may begin the survey when ready."

APPENDIX D

Demographic and Additional Questions

Demographics:

1. Gender: Male or Female
2. Age: ___________
3. Time in the Air Force (years/months): ___________
4. Race: American Indian, Asian, Black, Hispanic, White, Mixed/Other

Additional Questions:

1. Have you ever used a payday loan or cash advance? Yes, No
2. Do you have a minimum of $1,000 immediately available for emergencies? Yes, No
3. Including car loans, school loans, payday loans, and credit cards, what is your approximate amount of debt?
    a. $0 to $1000
    b. $1001 to $5000
    c. $5001 to $15000
    d. more than $15001

APPENDIX E

Recruitment Letters

4 March 2018

Dear new Air Force Recruit,

As a graduate student in the School of Education at Liberty University, I am conducting research as part of the requirements for a doctoral degree. The purpose of my research is to better understand personal finance in the Air Force, and I am writing to invite you to participate in my study.

If you are between ages 18 to 20, a new US Air Force recruit, and are willing to participate, you will be asked to complete a survey. It should take approximately 30-45 minutes for you to complete the survey. Your participation will be completely anonymous, and no personal, identifying information will be collected.

To participate, go to the provided link and take the survey.

A consent document is attached. The consent document contains additional information about my research, but you do not need to sign and return it. Thank you!

[survey link]

Sincerely,

Michael E. Pontiff
School of Education, Liberty University

4 March 2018

Dear Air Force Member,

As a graduate student in the School of Education at Liberty University, I am conducting research as part of the requirements for a doctoral degree. The purpose of my research is to better understand personal finance in the Air Force, and I am writing to invite you to participate in my study.

If you are between the ages of 19 and 22 years, an Air Force member of approximately two years, and are willing to participate, you will be asked to complete a survey. It should take approximately 45 minutes for you to complete the survey. Your participation will be completely anonymous, and no personal, identifying information will be collected.

To participate, go to the provided link and take the survey.

A consent document is attached. The consent document contains additional information about my research, but you do not need to sign and return it. Thank you!

[survey link]

Sincerely,

Michael E. Pontiff
School of Education, Liberty University

APPENDIX F

IRB Approval

LIBERTY UNIVERSITY
INSTITUTIONAL REVIEW BOARD

April 23, 2018

Michael E. Pontiff
IRB Exemption 3235.042318: Readiness for Blended Retirement: A Descriptive Analysis of Financial Literacy Among Young American Military Members

Dear Michael E. Pontiff,

The Liberty University Institutional Review Board has reviewed your application in accordance with the Office for Human Research Protections (OHRP) and Food and Drug Administration (FDA) regulations and finds your study to be exempt from further IRB review. This means you may begin your research with the data safeguarding methods mentioned in your approved application, and no further IRB oversight is required.

Your study falls under exemption category 46.101(b)(2), which identifies specific situations in which human participants research is exempt from the policy set forth in 45 CFR 46:101(b):

> (2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless:
> (i) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (ii) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.

Please note that this exemption only applies to your current research application, and any changes to your protocol must be reported to the Liberty IRB for verification of continued exemption status. You may report these changes by submitting a change in protocol form or a new application to the IRB and referencing the above IRB Exemption number.

If you have any questions about this exemption or need assistance in determining whether possible changes to your protocol would change your exemption status, please email us at irb@liberty.edu.

Sincerely,

[redacted]

G. Michele Baker, MA, CIP
Administrative Chair of Institutional Research
The Graduate School

LIBERTY
UNIVERSITY.
Liberty University | Training Champions for Christ since 1971

APPENDIX G

Headquarters USAF HRPO Approval

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

15 AUG 2018

MEMORANDUM FOR LIBERTY UNIVERSITY

FROM: AFMSA/SGE-C
Research Oversight & Compliance Division
7700 Arlington Blvd. Ste. 5151
Falls Church, VA 22042-5151

SUBJECT: Human Research Protection Official (HRPO) Review of **FSG20180013E**

References: (a) 32 CFR 219, *Protection of Human Subjects, Paragraph 102*
(b) DoDI3216.02_AFI40-402, *Protection of Human Subjects and Adherence to Ethical Standards in Air Force Supported Research*

In accordance with Reference (a), 101(b)(2), the HRPO has reviewed and concurs with the exempt determination of the following:

FSG20180013E, "Readiness for Blended Retirement: A Descriptive Analysis of Financial Literacy among Young American Military Members".

Please ensure this research is conducted in compliance with the References, including Reference (b), as it pertains to submission of continuing review reports, proper maintenance of records, and the application of written informed consent to all study participants, as required by the IRB.

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

Please refer to the Terms of Air Force HRPO Concurrence (attached) regarding reporting requirements and responsibilities of the Principal Investigator to the HRPO. Failure to comply could result in suspension of Air Force funding or support for this research activity.

[redacted]

PETER MARSHALL, CIP
Program Manager AF Research Oversight & Compliance Division

Attachment:
Terms of AF HRPO Concurrence