AGE AND GENERATION RELATED DIFFERENCES IN THE JOB SATISFACTION AND WORK ENGAGEMENT OF CIVILIAN DEPARTMENT OF DEFENSE SCIENTISTS AND ENGINEERS

by

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A DISSERTATION

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ABSTRACT

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Title Age and Generation Related Differences in the Job Satisfaction and Work Engagement of Civilian Department of Defense Scientists and Engineers

Inconsistent hiring trends in the civilian sector of the Department of Defense (DoD) have resulted in a series of gaps in the age demographics of the workforce. Currently, the Baby Boomer generation is approaching retirement, and the percentage of Civilian DoD workers eligible for retirement continues to increase. In the near future, this situation will result in the mass exodus of a large portion of the Civilian DoD workforce, leaving many critical roles and responsibilities to be assumed by the younger generations. In order to best understand how to manage this transition, federal managers must understand the key age and generation-related differences that exist in satisfying and engaging the federal workforce.

A survey instrument was compiled using the Job Satisfaction Survey (JSS), the Utrecht Work Engagement Scale (UWES), and a job factor importance questionnaire. The survey was distributed to a sample population at the US Army Aviation and Missile Research, Development, and Engineering Center (AMRDEC), with a total of 277 responses being used for analysis. MANOVA and ANOVA techniques were used to determine any statistically significant age and/or generation related differences in the importance of job factors, the satisfaction with certain job factors, and the level of engagement in one's job. Additionally, structural equation modeling (SEM) was used to investigate the relationship between job satisfaction and work engagement.

The findings of the research project suggest that several statistically significant differences in the level of job satisfaction and work engagement did exist, however these differences were due primarily to age, maturity, or career stage rather than generational cohort. Generational stereotypes found in popular literature were not supported. Lastly, the SEM analysis suggested that work engagement is a contributor to job satisfaction. By understanding the age-related differences suggested in the research, federal managers can better structure the work environment to become more satisfying and engaging to an age-diverse civilian DoD workforce.

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AJDI	Abridged Job Descriptive Index
AMOS	Analysis of Moment Structures
AMRDEC	Aviation and Missile Research, Development, and Engineering Center
ANOVA	Analysis of Variance
CP-16	Career Program-16
CPMS	Civilian Personnel Management Service
DJIA	Dow Jones Industrial Average
DOD	Department of Defense
HSD	Honestly Significant Difference
JDI	Job Descriptive Index
JIG	Job in General
JSS	Job Satisfaction Survey
MANOVA	Multivariate Analysis of Variance
MBI-GS	Maslach Burnout Inventory – General Survey
MIQ	Minnesota Importance Questionnaire
MSQ	Minnesota Satisfaction Questionnaire
NSPE	National Society of Professional Engineers
OLBI	Oldenburg Burnout Inventory
RDECOM	Research, Development, and Engineering Command
SEM	Structural Equation Model(ing)
SES	Senior Executive Service
US	United States
UWES	Utrecht Work Engagement Scale

CHAPTER I

INTRODUCTION

A. Introduction

Managers of today's workforce often have a specific management style which they utilize when dealing with all of their employees (Hersey et al. 2008). They tend to relate well with their employees of similar age, maturity, or career stage, but sometimes struggle to understand the younger generations entering the workforce. It is possible that they could manage more effectively if they understood the specific traits of each generation (Dayan 2005). Recent articles have been published about the generalizations of the younger generations and the differences from the earlier generations (Chan 2005, D'Amato and Herzfeldt 2008, Dayan 2005, Glass 2007, NSPE 2008, Smola and Sutton 2002, Ting 1997, Williams 2004), but more research is necessary to fully understand the key age and generation related differences in today's workforce.

The current workforce in the Department of Defense (DoD) comprises three generations and an age span of over fifty years. Despite the wide range of ages in the workforce, managers often assume that each of their employees have the same needs and desires in order to be satisfied and engaged in his or her work (Dayan 2005). Empirical evidence has been collected in recent years that suggests that age and generation can have an effect on the importance of certain job factors and overall satisfaction (Cennamo and Gardner 2008). Understanding these key age and generation-

related differences is critical in order for managers to most effectively and efficiently manage their employees and increase overall job satisfaction levels across the workforce.

B. Generations in the Workplace

A generation, or generational cohort, is a group of people of similar age that share significant economic and social life events. These cohorts develop a peer personality or generational characteristics as a result of these shared experiences (Kupperschmidt 2000). Many of the characteristics have been generalized into stereotypes for each generation. Not only have stereotypes been developed for personality traits, but also for work ethic, values, and dedication. At the time of this research, the DoD workforce consisted of three generational cohorts: Baby Boomers, Generation X, and Generation Y (also referred to as 'Millenials'), which will be described in more detail in the following chapter.

C. Description of the Problem

1. Upcoming Retirement Boom in DoD

The DoD has experienced many hiring freezes over the past four decades. This has resulted in a series of age gaps in the DoD employee demographics. The Baby Boomer generation, which makes up a large portion of the Government civilian workforce, is rapidly nearing retirement. A current report by the Civilian Personnel Management Service indicates that 29% of the total population of federal employees will be eligible for optional retirement in September 2013, with a staggering 62% being eligible for optional and early retirement (CPMS 2008). "The federal government is

facing a *retirement tsunami* in the next few years, and new programs – and better ways of thinking – are required to solve the problem" (Fillichio 2006, 3). Fillichio (2006) also reports that 60% of the federal government's General Service employees – and 90% of the Senior Executive Service (SES) – will be eligible to retire in the next ten years. These factors have created a situation that will lead to an emerging retirement boom in the Department of Defense over the next five to ten years, leaving a generation gap in the workforce with many key roles and responsibilities left to be filled by the younger generations of knowledge workers.

2. Contradicting Literature on Subject

Research has been conducted on the motivation and job satisfaction characteristics of the various generations, but with contradicting results. A portion of the research indicates that the generational stereotypes are evident in the workplace (Chan 2005, D'Amato and Herzfeldt 2008, Glass 2007, Smola and Sutton 2002), whereas others claim that there are no statistically significant generational related differences in motivation and job satisfaction (Dries et al. 2008, Jurkiewicz 2000, Koenigsknecht 2000, Wong et al. 2008, Yang and Guy 2006). The proposed research will address whether or not an age-related difference actually exists in the Civilian DoD population of scientists and engineers, and if any differences are consistent with the generational stereotypes.

D. Research Objectives

Several questions remain to be answered on the topic of age and generation related differences. In particular, these questions will specifically address the Civilian

DoD population which is facing an upcoming retirement boom. By answering the questions of interest, federal managers will be better prepared to manage the new generation of younger employees that will soon be assuming critical roles and responsibilities left behind by the retiring workforce.

In order to understand what satisfies a DoD employee, it is important to first determine which job factors DoD employees consider most important (NSPE 2008). The relative importance of various job factors to an employee should be a major consideration when managing any group of employees (Dayan 2005). How are these factors different between younger and older employees? Do younger and older employees all place importance on the same set of factors?

After determination of the relative importance of job factors to the sample population, the area of job satisfaction will be addressed. Are the younger generations (Generation X and Generation Y) satisfied by the same factors as the older generation (Baby Boomer) in the DoD workforce? If not, what are the differences, and how should the generations be treated to optimize job satisfaction across the entire workforce.

In addition to age and generational-related differences job satisfaction, other area of research interests are age and generational-related differences in work engagement, and the relationship between job satisfaction and work engagement. Lawler and Porter's (1967) expectancy theory suggests that an engaged employee will naturally be satisfied. But an area that hasn't been addressed is whether or not younger employees are engaged in the same manner as older employees. What factors can be addressed to better engage the workforce? Does a more engaged employee naturally have a higher level of job satisfaction? Alternatively, does a highly satisfied employee naturally more engaged in

his work? This connection between job satisfaction and work engagement will also be investigated in this research.

Generational stereotypes will also be addressed throughout this research. Do the generational stereotypes hold true for knowledge workers in the DoD workforce? What particular differences exist amongst the various generations? And, more importantly, are these differences a result of generational cohort, or are these differences simply a result of age, career stage, and maturity?

Lastly, this research will develop a theoretical framework that includes all measured factors of job satisfaction and work engagement. This combined model will suggest the optimal combined framework that best explains the job satisfaction and work engagement factors of the DoD workforce. By doing so, managers can understand the relative contribution of all factors to employee well being.

In order to answer these questions, research will be conducted by collecting and analyzing survey data from a DoD research and development facility, consisting primarily of scientists and engineers. A notional framework of satisfaction and work engagement factors will be established based upon the literature review and statistically analyzed via structural equation modeling.

E. Significance

Managers need to understand the key factors that engage and satisfy this younger generation of workers in order for the younger employees to most efficiently staff the critical positions left behind by the retiring workforce. It has been suggested that job satisfaction and productivity increase when immediate supervisors with a generational

perspective understand the different values, attitudes, behaviors, preferences, and expectations of their multi-generational employees (Kupperschmidt 2000).

The results of the research could potentially give managers the information needed to provide a work environment conducive to higher job satisfaction and work engagement levels. Past research suggests that job satisfaction is a key antecedent of worker turnover (Saari and Judge 2004, Lambert et al. 2001). However, Koch and Steers (1978) found that for public sector employees work attachment was a more effective predictor of turnover than satisfaction. Therefore, job satisfaction and work engagement are both important job attributes that should be considered when striving to retain the younger generation of DoD employees. Additionally, if age and/or generational differences are determined, managers will then be able to adjust their management style when dealing with a particular individual or group of employees based upon their generation or age group. Even if no age or generation related differences are discovered, managers will still understand the importance of job factors to his/her employees, which will facilitate better communication and higher levels of satisfaction in the workplace.

Prior to collection and analysis of data for this research, a thorough literature review was conducted to determine the job factors that should be considered when addressing job satisfaction and work engagement. By better understanding what past researchers had discovered in this topic area, the proposed research could be better structured to contribute to the body of knowledge without redundant efforts. A review of relative literature and research findings is discussed in the next chapter.

CHAPTER II

LITERATURE REVIEW

Given the state of the DoD workforce demographics and rising retirement eligibility percentages, research was necessary to determine the job characteristics that were desirable to the younger generations that will soon assume the roles and responsibilities left behind by the retiring workforce. Many surveys exist to measure the efficacy of employers' attempt to create a favorable workplace. Common quantifiable job factors include the working environment, compensation, organization structure, rewards, work engagement, and overall job satisfaction. The research outlined in this dissertation will investigate the job satisfaction, work engagement, and job factor importance of the DoD workforce.

Prior to the collection and analysis of data, a thorough literature review was conducted in the primary topic areas of interest: job satisfaction, work engagement, motivation, age-related differences, generational stereotypes, and civilian federal government employees. This particular research was anchored on these traditional satisfaction and motivational theories, and was designed to contribute to the body of knowledge with additional findings in the area of age and generation-related differences in the job satisfaction and work engagement of the civilian Department of Defense employee, an area where no current data existed.

A. Classical Motivation and Job Satisfaction Theories

Numerous classical theories exist that provide many different perspectives on the subject of employee motivation and job satisfaction. Locke (1976, 1304) defined job satisfaction as 'a pleasurable or positive emotional state resulting from the appraisal of one's job or job experiences'. This is the most widely used research definition of job satisfaction (Saari and Judge 2004). Motivation, on the other hand, has many definitions, without a universally accepted meaning. In fact, Kleinginna and Kleinginna (1981) gathered 140 definitions of motivation that had appeared in the literature at the time of their research. Determining a quantitative method of measuring motivation is also challenging. One measure of motivation is work engagement, the extent that one is immersed or engaged in their work (Schaufeli and Bakker 2003). Therefore, Schaufeli and Bakker (2003) proposed to use work engagement as a measureable job factor to indicate the level of vigor, dedication, and enthusiasm one has in the workplace. Major theories that have led to the understanding of motivation and job satisfaction include those of Maslow, Herzberg, Vroom, McClelland, Adams, and Porter and Lawler.

1. Maslow's Hierarchy of Human Needs

One of the most widely known motivational theories is Maslow's (1943) hierarchy of human needs. Maslow proclaimed that man is a perpetually wanting animal with an appetite of needs, motivated by unsatisfied needs. Once a lower level need is satisfied, another appears in its place. The hierarchy of human needs consists of five need levels: physiological, safety, love, esteem, and self-actualization (listed in order from the bottom to the top), as illustrated in Figure 2.1. He established a theory that an

individual's motivation was dominated by the lowest unsatisfied need. Once a need level is met, the individual is motivated by the next unsatisfied need on the hierarchy. A satisfied need is not a motivator for behavior - none of the needs will affect one's behavior except when an individual is deprived of the need.

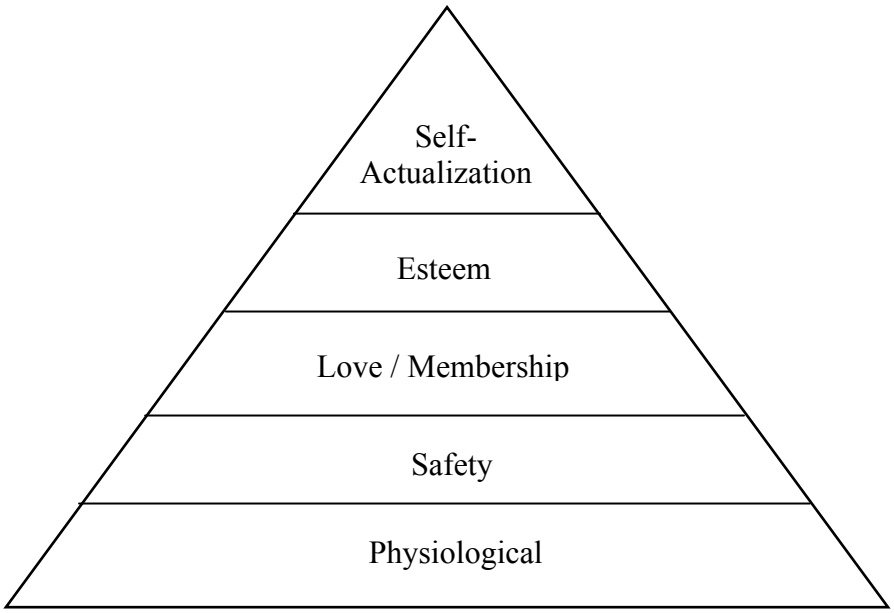

Figure 2.1 Maslow's Hierarchy of Human Needs

The lowest need level on the hierarchy is physiological needs. These basic needs consist of food, shelter, exercise, and sex (Maslow 1943). In the working environment, these would translate to working conditions. Once these fundamental needs are reasonably satisfied, needs at the next higher level, safety needs, begin to dominate (i.e., motivate) man's behavior. The safety needs include protection against danger, threat, and deprivation. Such needs in the work place would include routine, fairness, and assurance the job is stable for the foreseeable future. Next on the hierarchy are

social/love needs, which become dominate when man's first two levels are reasonably satisfied. The social needs include needs for belonging, association, acceptance by fellow workers/colleagues, for giving and receiving friendship and love. Many studies have demonstrated that the tightly knit, cohesive work group may be far more effective than an equal number of separate individuals in achieving organizational goals. Above the social needs, the fourth level on the hierarchy is esteem/ego needs. These needs consist of two kinds: those that relate to one's self esteem, and those that relate to one's reputation. Lastly, the top of the hierarchy of human needs consist of the needs for self-actualization or self-fulfillment. These are the needs for reaching one's true potential, for continued self-development, and being creative. Most people struggle to satisfy their deprivation of the other lower-level need, therefore the needs for self-actualization often remain dormant (Maslow 1943).

Maslow (1943) cautioned against the false impression that a need must be completely satisfied before the next need emerges. In fact, most people are partially satisfied with their basic needs while partially unsatisfied with the same needs. A more accurate representation of the hierarchy would be in terms of decreasing percentages of fulfillment with increasing levels of the hierarchy.

2. Herzberg's Two-Factor Theory of Job Satisfaction

Herzberg, Mausner, and Snyderman (1959) developed a theory based on the existence of certain factors affecting job attitudes. The authors conducted interviews with accountants and engineers, and asked their subjects to think of situations in the past when they felt especially good (extreme satisfaction) or bad (extreme dissatisfaction)

about their job. The interviewees were then asked to describe those specific situations. The documented feelings from the interviews were used to specify a list of factors of job satisfaction and job dissatisfaction. The findings from these studies suggest that the factors involved in producing job satisfaction are separate and distinct from the factors that lead to job dissatisfaction. The opposite of job satisfaction is not job dissatisfaction but, no job satisfaction; and, similarly, the opposite of job dissatisfaction is not job satisfaction, but no job dissatisfaction. Factors were classified either as *motivators* (resulting in job satisfaction if present) or *hygienes* (resulting in job dissatisfaction if present). The motivators corresponded to elements of job satisfaction, while the hygienes corresponded to elements of job dissatisfaction (Herzberg 1968).

Positive evidence of motivator factors result in job satisfaction and are intrinsic to the job. These motivators consist of recognition, achievement, advancement, responsibility, and the work itself. Each of these motivators appeared with greater frequencies when the subjects described their positive job experiences than they did in the negative job experiences. The negative evidence of hygiene factors, extrinsic to the job, result in job dissatisfaction. These factors include company policy and administration, technical skills of and interpersonal relationships with supervisors, interpersonal relationships with peers, salary, and working conditions. One factor, salary, appeared as frequently in the positive sequences as it did in the negative. However, the authors found that as a job attitude affector, salary had more potency as a job dissatisfier than as a job satisfier (Herzberg, Mausner and Snyderman 1959).

When implementing this theory, Herzberg et al. (1959) suggested that managers first concentrate on eliminating the negative hygiene factors that lead to job

dissatisfaction but cautioned to not expect job satisfaction from the workforce. By eliminating the hygiene problems, managers can lessen the job dissatisfaction of the employees, and then allow more attention to the motivators, which have a much longer-term effect on employees' attitudes (Herzberg 1968).

3. McClelland's Need for Achievement

McClelland (1961) studied the mystery of the need to achieve (or absence of it) in people. He conducted studies to determine if this need was hereditary or the result of an environment, and if there was some technique that could give this need to achieve to people who do not have the same will. McClelland proclaimed that most people can be divided psychologically into two broad groups: 1) the majority of people who are not greatly challenged to achieve results, and 2) the minority of people who are challenged by opportunity and are willing to work hard to achieve something.

This theory was based on a study of 450 laid off workers during a plant shutdown in Erie, Pennsylvania. McClelland found that most of the unemployed workers stayed home and checked with the United States Employment Service to see if their old jobs were available. In contrast to this strategy, a small minority was observed that behaved differently: the day they were laid off, they started job-hunting. They actively pursued all help wanted ads, checked with various professional and social organizations, looked into training courses to obtain new skills, and even left town to look for work. This minority group showed added initiative and enterprise in finding what they needed. McClelland referred to those in the minority with this personality characteristic as *n*-Achievers (McClelland 1961).

N-Achievers (nAch) set moderately difficult, but potentially achievable goals for themselves and were always setting challenges for themselves, tasks that made them stretch themselves. They had a strong preference for work situations in which they got concrete feedback on how well they were doing. They behaved like this because they habitually spent their time thinking about doing things better. Psychologists can determine one's *nAch* (need for Achievement) score by the frequency with which the person mentions doing things better (McClelland 1961).

The majority of people, however, could be classified as *n*-Affliliates (nAff). They lacked the motivation to constantly improve that was witnessed in the n-Achievers. This group of people was more concerned with their need for affiliation with others. These people, when given a choice of a working partner, chose friends over experts, whereas people with higher nAch tended to choose experts over their friends. Since n-Achiever behavior was more successful, systematic, and productive, training methods were established focusing on increasing one's nAch score by teaching participants how to think, talk, and act like a person with a higher nAch (McClelland 1961).

4. Adams' Equity Theory

Adams (1965), a workplace and behavioral psychologist, asserted that employees seek to maintain equity between the inputs that they bring to a job and the outcomes that they receive from it against the perceived inputs and outcomes of others (Adams 1965). His equity theory proposed that individuals would perceive themselves as either under-rewarded or over-rewarded based on the comparison of outcome/input ratio of the individual to the ratio of their peers. Inputs are the employee's contribution, which are

viewed as entitling him/her to the outcome. These include time, effort, commitment, skills, determination, enthusiasm, etc. Outcomes are the positive and negative results that an employee has received, such as salary, benefits, recognition, responsibility, sense of achievement, praise, and esteem. When the ratio of outcomes to inputs between individuals is close, the employee should have more job satisfaction. When individuals find themselves participating in inequitable relationships, they become distressed, and will seek to maintain an equitable ratio between the inputs they bring to the relationship and the outcomes they receive from it (Adams 1965).

5. Goal Theory

Many researchers have determined that the establishment of goals can have a positive effect on worker performance and motivation. When reviewing laboratory and field studies, Locke et al. (1980) found that goals affect performance by directing attention, mobilizing effort, increasing persistence, and motivating strategy development. 90% of the studies showed that specific, challenging goals led to higher performance than easy goals. Goal setting was most likely to improve performance when the goals were specific and sufficiently challenging, when the subjects had sufficient ability, when feedback was provided to show progress in relation to the goal, when rewards such as money were given for goal attainment, when the manager was supportive, and when the assigned goals were accepted by the individual (Locke et al. 1980).

6. Recent Developments

The majority of the motivation and job satisfaction theories discovered in the literature review were at least thirty years old. Most of the ideas since the 1980s and have been simply refinements or extensions of existing theories. During the 1990s, intellectual interest in work motivation theory seemed to decline. Rather than researchers publishing breakthrough developments in work motivation theory, the majority of the published works were minor extensions, empirical tests, or applications of existing theories. Even the most recent textbooks in the field of management and organizational behavior still reference theories from the 1960s and 1970s, with very few references to more recent work (Steers et al. 2004).

Being as these classical theories are continually taught, it is important to note the particular job factors that are addressed in each theory. Understanding the particular job factors that affect job satisfaction will be important when developing or selecting a survey instrument for this research. A review of the job factors comprised in the classical job satisfaction theories is listed in Table 2.1.

Table 2.1 Work Factors Comprised in Classical Job Satisfaction Theories

Theory	Work Factors included
Maslow 1943	Physiological, Safety, Love/Membership, Self-esteem, Self-actualization
Herzberg et al. 1959	Recognition, achievement, advancement, responsibility, work itself, company policy, relationships with peers, relationship with supervisor, salary, working conditions
McClelland 1961	Need for achievement, need for affiliation
Adams 1965	input (time, effort, commitment, skills, determination, etc) outcome (salary, benefits, recognition, responsibility)

B. Work Engagement Theory

Work engagement is a quantifiable characteristic of how immersed one is in his or her work, and is considered the opposite of burnout (Schauefeli and Bakker 2003). Engaged employees have an energetic and effective connection with their jobs and are able to better deal with the demands of their jobs. Schauefeli and Bakker (2003, 4-5) defined work engagement as follows:

> Engagement is a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption. Rather than a momentary and specific state, engagement refers to a more persistent and pervasive affective-cognitive state that is not focused on any particular object, event, individual, or behavior.

The extent of work engagement can be characterized by one's vigor, dedication, and absorption, each of which is defined as follows:

> Vigor is characterized by high levels of energy and mental resilience while working, the willingness to invest effort in one's work, and persistence even in the face of difficulties. Dedication refers to being strongly involved in one's work and experiencing a sense of significance, enthusiasm, inspiration, pride, and challenge. Absorption, is characterized by being fully concentrated and happily engrossed in one's work, whereby time passes quickly and one has difficulties detaching oneself from work. (Schaufeli and Bakker 2003, 5)

The nature of work engagement has been tied to intrinsic motivation by many researchers, dating back to Herzberg's (et al. 1959) classical theory. Although work engagement can be quantifiably measured, the connection between work engagement and job satisfaction is often overlooked. Many theorists have related these two traits together in expectancy theory, which is based on the assumption that one will increase his or her efforts if a desirable outcome is perceived as a result of that increased effort. However,

these theories suggest contradicting relationships between work effort (engagement) and job satisfaction.

1. Vroom's Expectancy Theory

Vroom (1964) established one of the first theories of motivation and work engagement based on expectancy theory. Contrary to the need based theories of Maslow and Herzberg, Vroom's expectancy theory is focused on outcomes rather than needs. His theory, comprised of three factors: expectancy, instrumentality, and valence, suggested that increased effort will lead to increased performance. Expectancy is the individual's belief that increased effort will lead to increased performance. Instrumentality is the individual's belief that performance will lead to an achievement of some reward. Lastly, valence is the importance of the achievement or reward to the individual. Therefore, an individual's work effort is driven by his expectancy that increased performance will lead to increased achievement or rewards that are consistent with the individual's personal goals.

2. Porter and Lawler's Expectancy Theory

Porter and Lawler (1967) developed an expectancy theory that states that motivation is created by one's perception that his efforts will lead to a reward, which will ultimately result in satisfaction. The rewards were categorized as extrinsic or intrinsic. The extrinsic rewards, such as pay, promotions, security, and status, were rewards over which the organization had direct control, whereas the intrinsic rewards, such as feeling of accomplishment, feeling of worth, etc, were found within the employee. In their

empirical study, Porter and Lawler found that intrinsic rewards had a closer tie to satisfaction than extrinsic rewards. Their expectancy theory was summarized in the path shown in Figure 2.2.

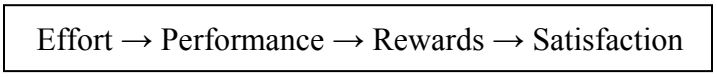

Figure 2.2 Path Diagram of Porter and Lawler's Expectancy Theory

3. Connection between Job Satisfaction and Work Engagement

Many expectancy theories relate job satisfaction and work effort (engagement), however, the relationship between the two is not consistent throughout the literature. Porter and Lawler's (1967) expectancy theory was consistent with that of Vroom (1964), who stated that good performance leads to rewards. Porter and Lawler (1967) expanded Vroom's theory by stating the rewards lead to satisfaction, thus performance is the cause of satisfaction. However, this model is in direct disagreement with Herzberg's theory, which claimed that satisfaction results in performance (Herzberg 1968). These contradicting statements serve as evidence that further research is necessary to better describe the relationship between work engagement and job satisfaction. Does the level of job satisfaction determine one's level of work engagement, or does the level of work engagement determine one's level of job satisfaction? This unknown will serve as a basis for one of the research questions to be addressed in this dissertation.

C. Generation Characteristics and Stereotypes

At the time of this dissertation, the workforce was dominated by three generations: Baby Boomers, Generation X, and Generation Y (Glass 2007). Each generation group, also referred to as a cohort, includes individuals who have shared historical or life experiences (Smola and Sutton 2002). As a result of shared experiences, each generational cohort has developed a peer personality or set of generational characteristics, including values, work ethic, attitudes, preferences, and behaviors (Hansford 2002, Kupperschmidt 2000).

When specifically addressing the Government workforce, Bob Tobias (Trahant 2008, 35) quoted that "each of these generations has distinctly different values, philosophies, and attitudes toward work, formal authority, and organizational affiliation." While popular notions about the generations should not be over-generalized (Cennamo and Gardner 2008), it is important for managers to understand these differences when addressing a multi-generational workforce. Recognizing and understanding generational differences could be critical to the success of organizations (Arsenault 2004, Bova and Kroth 2001).

1. Baby Boomers

The Baby Boomer generation, is defined as those individuals born between the years of 1944 and 1960 (Arsenault 2004). Known as the original 'me' generation, Baby Boomers are the most influential generation in American history, characterized by idealism, self-improvement, high expectations, and an intense self-centeredness (Turetsky 2006). Baby boomers tend to pursue promotions by working long hours,

demonstrating loyalty, and for some, relying on a degree of cunning, hard-core business ruthlessness (Dayan 2005). Boomers often feel that the younger generations do not work as hard as they do (Glass 2007). Workers in this generation require little feedback from management, whereas the younger generations expect constant feedback (Glass 2007). This generation is driven by the old adage that 'success will come through long hours and corporate loyalty' (Dayan 2005). Employees in this generation value on-job security and a stable working environment, and are most likely to remain loyal and attached to an organization (Wong et al. 2008).

2. Generation X

The Generation X group is defined as those born between the years of 1961 and 1980 (Arsenault 2004). Generation X is comprised of the children of workaholic parents, the child-care generation who grew up to be self-reliant, individualistic and determined to maintain a work-life balance (Dayan 2005). These individuals are often described as the 'latchkey' generation, due to the fact that both parents typically worked outside the home (Yang and Guy 2006), meaning these were the kids that came home to an empty house, with a key literally on a chain (Glass 2007). Stereotypes frequently associated with this generation include being cynical, pessimistic, contemptuous, naïve, arrogant, fiercely independent, and materialistic (Glass 2007, Jurkiewicz 2000, Kupperschmidt 2000).

This generation is not loyal to one company, mainly due to seeing the jobs of their Baby Boomer parents being downsized after a dedication of long hours and loyalty to the same company (Dayan 2005). Very few Generation X employees expect to stay at their current company for life. They have learned that financial advancement often comes at

the price of switching jobs or transferring to a new organization, and are also more likely to leave one their job to seek out more challenging options or improved benefits (Turetsky 2006, Wong et al. 2008). Smola and Sutton (2002) concluded that Generation X and Baby Boomers have significantly different work values, specifically that Generation X was found to be less loyal to their employer and to be more 'me' oriented. They also concluded that Generation X was less likely to feel that work as an important part of one's life. However, they are more likely to stay at their current employer as long as they are learning new skills, which ironically motivates this generation because it makes them more marketable for future endeavors (Karp et al. 1999, Turetsky 2006).

Although Baby Boomers feel that members of Generation X do not work as hard as they do, Generation X feels that they can work more efficiently and measure results rather than time on the clock. The most important thing to them is a work/life balance, something they feel Baby Boomers do not have (Kupperschmidt 2000, Glass 2007). The ability to have freedom in the workplace is valued by Generation X workers (Hansford 2002). However, feedback is also important to the Generation X employees. Unlike the Baby Boomers, the younger generations like, and expect, constant feedback (Glass 2007).

Generation X is thought to prefer team environments and a sense of belonging (Yang and Guy 2006). Research conducted by Karp (et al.) found that Generation X is significantly more team-oriented than Baby Boomers. While the boomers prefer a work environment conducive to results, Generation X prefers a work environment conducive to relationship building (Loomis 2000). Many members of Generation X often turn to small

groups of friends, peers, and even teammates for support in their individual efforts and relationships (Karp et al. 1999).

3. Generation Y

The youngest generation cohort in the current workforce, Generation Y is defined as those born between the years of 1981 to 2000 (Arsenault 2004). Many people associate Generation Y, also known as Gen Y or 'millennials', as being lazy and less motivated because jobs outnumbered people when they entered the workplace (Twenge and Campell 2008, Lander 2006). Much like Generation X, this new generation thrives on constant feedback. Members of Generation Y have demonstrated levels of self esteem, narcissism, anxiety, and depression, combined with lower needs of social approval and a stronger external locus of control (Macky et al. 2006, Twenge and Campbell 2008).

With the emerging growth of the internet and technology during their lives, Generation Y is technology savvy, readily adapts high-tech devices, and are much more likely to have a Facebook social networking page, or bring their iPod MP3 player to work (Cennamo and Gardner 2008, Twenge and Campbell 2008). This generation favors instant messaging, text messaging, and emails over having a face-to-face conversation or using the telephone (Glass 2007). This generation does not expect to stay in any particular job longer than five years (Turetsky 2006).

D. Motivating the Younger Generations

Lander (2006) suggests that employers encourage lateral moves within the firm so that younger employees are less likely to become bored and leave. In other words, organizations could retain workers if they helped them have their 'career changes' within the organization. She also asserts that young employees will stay at their existing employer as long as they see room for advancement and potential to reach their personal goals. When these younger workers no longer see this fit, they will look for employment elsewhere (Lander 2006). When rewarding Generation X and Y employees, managers should downplay ceremonies, but give plenty of feedback and respect their talent (Hansford 2002). Younger generations are thought to work more for intrinsic rewards (Yang and Guy 2006). Managers should consider such rewards as paid time off (to promote a work/life balance), training opportunities, flexible work schedules, and telecommuting (Fillichio 2006, Karp et al. 1999).

Karp (et al. 1999) discovered that Generations X and Y are significantly more team-oriented than Baby Boomers. However, with Generation X being fiercely independent, managers should make a great effort to recognize individual strengths, contributions, and achievements, and how each individual's strengths can best contribute to the team. Successful teams from the younger generations should be a compilation of individual strengths, organized in a manner to deliver team results through synergy (Karp et al. 1999).

The younger generations demand more frequent feedback and communication from their supervisors (Glass 2007, Karp et al. 1999). Dress code should also be considered, as today's younger generations are more relaxed and informal in their dress

(Twenge and Campbell 2008). Not only are interesting work and good pay key to higher employee motivation, but all other available reward systems such as job enrichment, promotions, job enlargement, internal and external stipends should also be considered (Lindner 1998).

E. Selection of Work Factors that Determine Job Satisfaction

It is important to note the various work factors and characteristics that were reported to differ in the literature between different age groups and generations, especially those affecting job satisfaction. A summary of the work factors referenced in the literature review of age and generational-related difference is listed in Table 2.2.

The nine most occurring work factors - working relationships/coworkers, communication/feedback, working conditions, pay/salary, promotion opportunities, nature of work, rewards, work/life balance, and trust – were consistently referenced in the literature as work factors that affect employee satisfaction. These factors were selected as the factors of interest to be used in collecting data on job satisfaction. The selection of these metrics will serve as a means of developing or selecting the appropriate survey instrument that measures these attributes of one's job, and will provide the necessary empirical data to analyze any potential age and generational-related differences in this dissertation.

Table 2.2 Review of Work Factors Referenced in Literature Review and Selection of Factors of Interest

	Work Factors	Number of References	Adams 1965	Cennamo and Gardner 2008	Dayan 2005	Glass 2007	Herzberg 1968	Jurkiewicz 2000	Koenigsknecht 2002	Lander 2006	Lindner 1998	Maslow 1943	McClelland 1961	NSPE 2008	Saari and Judge 2004	Spector 1985
Factors of Interest	**Working Relationships (coworkers)**	**7**				X	X	X				X		X	X	X
	Communication / Feedback	**6**				X	X	X			X			X		X
	Working Conditions	**6**					X		X		X	X		X		X
	Pay / Salary	**6**	X		X		X				X			X		X
	Promotion Opportunities	**6**			X		X			X	X			X		X
	Nature of Work	**5**					X	X			X			X		X
	Rewards	**5**	X		X			X			X					X
	Work / Life Balance	**4**		X	X	X								X		
	Trust	**3**			X	X			X							
	Recognition	2	X				X									
	Responsibility	2	X				X									
	Company Policy	1					X									
	Affiliations	1											X			
	Achievement	1											X			
	Physiological	1										X				
	Safety	1										X				
	Membership	1										X				
	Self - Esteem	1										X				
	Self - Actualization	1										X				

F. Department of Defense Civilian Workforce

The Department of Defense (DoD) has typically hired new employees in waves, creating a lack of continuum in workforce ages. The DoD hired many new employees during the 1980's, with these new hires consisting primarily of the Baby Boomer generation. However, the DoD went on a hiring freeze during the immediate years to

follow. After the Cold-war, the DoD down-sized the Civilian workforce. Additionally, the decrease in DoD activity after the fall of the Soviet Union led to a sharp curtailment of hiring new DoD civilian employees. As a result of these inconsistent hiring trends, the number of new hires in the early 1990s was quite small, and the average age of incumbent DoD civilian employees increased. The small number of new hires meant that younger DoD civil servants were not being developed (Roctker 2008).

These trends of inconsistent hiring numbers have led to a natural generational gap in the DoD civilian workforce. The federal government is facing a large surge in employee retirements over the next few years, and the younger generations will be assuming the critical roles and responsibilities left behind by the retiring generation (Fillichio 2006).

The Civilian Personnel Management Service produces DoD Civilian demographics reports on a monthly basis. Recent reports (CPMS 2008) indicate that 29% of DoD employees will be eligible for optional retirement in five years, whereas a staggering 62% of DoD employees will be eligible for either optional or early retirement in five years. Bob Tobias, director of Public Sector Executive Education at American University's Institute for the Study of Public Policy Administration, stated in a recent speech that 'with a looming retirement 'tsunami' about to result in the departure of thousands of baby boomers from federal jobs, government executives are increasingly concerned how to recruit enough recent college graduates and young professionals to serve the needs of government in the decades ahead' (Trahant 2008, 35). This statement was supported by the fact that 90% of the Senior Executive Service corps will retire in the next ten years (Trahant 2008). Figure 2.3 illustrates the rising percentages of

retirement eligible workers in the Federal Government workforce. With the emerging mass-exit of the Baby Boomer generation from the DoD workforce, Government managers must focus their efforts on the Generation X employees that will soon assume the leadership roles and responsibilities left behind by their older predecessors.

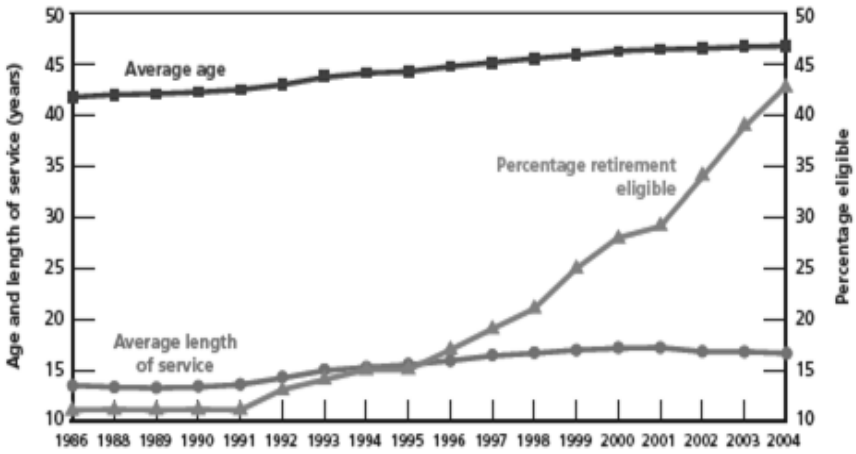

Figure 2.3 Federal Workforce Retirement Eligibility (U.S. Office of Personnel Management 2005)

G. Recent Studies

1. Lord's Emperical Evaluation of the Motivation and Satisfaction of Older Knowledge Workers

For his 2004 dissertation, Lord collected data using the Minnesota Satisfaction Questionnaire, Minnesota Importance Questionnaire, and the Meyer and Allen Organizational Commitment Survey to evaluate the satisfaction and motivation of older (age ≥ 55 years old) knowledge workers. Drucker (1977) defined knowledge workers as "accountants, engineers, social workers, nurses, computer experts of all kinds, teachers

and researchers" (Drucker 1977, 271). The objectives of Lord's (2004) research were to determine job related differences in older knowledge workers, to determine if factors that motivate older knowledge workers were the same as those that motivate younger knowledge workers, and to evaluate the classical motivational theories with respect to older knowledge workers.

Using data collected from 246 participants from 37 different organizations (primarily in the aero, medical, commercial, and IT fields), Lord (2004) utilized MANOVA and ANOVA analyses to determine statistically significant differences in the two age groups. From the Minnesota Satisfaction Questionnaire, the statistically significant job satisfaction factors differing were accomplishment, chance to try out my own methods (creativity), doing different things, making use of my abilities, freedom to use my judgment, and co-workers getting along. In each of these job factors, the older workers (ages ≥ 55) reported a higher level of satisfaction than the younger (age < 55) workers.

The statistically significant differences in importance of job factors, measured from the Minnesota Importance Questionnaire, included advancement, security, supervisor-human relations, independence, social service, and compensation (Lord 2004). Younger workers placed more importance on advancement, compensation, security, and supervisor relations, whereas older workers placed more importance on independence and the ability to do things for others.

These findings dispelled many of the negative stereotypes regarding older workers. Older workers have been stereotyped as lacking flexibility, being resistant to new technology, being unwilling or unable to learn new skills, and unable to change or

adapt. Each of these characteristics was unfounded throughout Lord's (2004) research. His research also determined that older workers were generally more satisfied than younger workers.

2. Analysis of Generational Differences among Air Force Civil Servants

Another relevant finding from the literature review was Williams' 2004 analysis of generational differences among civil servants. Concerned with the previously mentioned age/generational gap in the civilian government workforce, Williams (2004) conducted research to determine potential generational differences specifically within civil servants in the US Air Force. The generational differences explored were 1) general attitudes toward work, 2) attitudes toward the current job and organization, 3) attitudes toward the way work is done, and 4) attitudes toward organizational promises.

A 77-item questionnaire was distributed to measure the desired job attributes. Using Smola and Sutton's (2002) generation definitions of Millennials (born in the years 1979 to 1994), Generation X (born between the years 1965 and 1978), and Baby Boomers (born between the years 1946 and 1964), Williams (2004) categorized each of the 296 participants into the appropriate generation according to their self-reported age. Being as the collected sample included very few Millennial responses, this study focused only on generational differences between Baby Boomers and Generation X.

Williams (2004) did report a generational difference between Baby Boomers and Generation X, however these differences were only statistically significant in two particular areas: salary/extrinsic rewards, and organizational commitment. The Generation X was reported to have a higher desire for extrinsic rewards, and a stronger

intention to leave the organization than the Baby Boomers. Williams noted that these differences could be attributed to age rather than generation. Instead of focusing on generational stereotypes, Williams (2004) suggested that leaders focus on an individual's current stage of life, which would more accurately reflect their attitudes toward work and job satisfaction.

3. National Society of Professional Engineers Report on Young Engineers

The National Society of Professional Engineers (NSPE 2008) conducted a study in 2006-2007 to determine the motivation factors of young engineers. The national survey was collected from over 600 young engineers (younger than 35) at different stages of their careers and in various disciplines. The participants were asked to quantify the significance (on a 5 point Likert scale) of several motivational factors. The survey results were then used to determine the overall motivating and de-motivating factors of engineers. The responses were further analyzed to provide insight into how these factors change over time as the engineer becomes older and is promoted to higher positions.

Based on the survey results, the top motivating factors included 1) career growth / advancement opportunities, 2) self-improvement, 3) salary compensation, 4) desire to prove worth, 5) client satisfaction, 6) interest level in job, and 7) sense of professional obligation. These factors were seen to be some of the most common factors for engineers at different stages of their careers, however, the relative importance of these factors did change at different levels of career experience (NSPE 2008).

The authors also developed a list of de-motivators that consistently appeared at the bottom of the survey results. These factors could actually have a negative impact on

motivation, hence the term de-motivators. Some of the higher ranking de-motivators found were 1) office layout/work space, 2) office climate/mood, 3)lack of adequate equipment and technology, 4) company policies, 5) prestige, 6) recognition by peers outside the company, 7) recognition by company management, 8) lack of mentoring relationships, and 9) lack of adequate performance evaluations and career development planning.

Many of the survey respondses indicated that few generational differences existed, rather the current young engineers were looking for the same recognition and respect that previous generations had sought in their careers. These results of the survey were rather consistent across the sample population. The survey responses emphasized that recognition and respect by colleagues and supervisors played an important role in determining the career satisfaction and motivation of young engineers (NSPE 2008).

4. The Need for a Framework of Theories

While each of the pioneers in motivational and job satisfaction theory development has greatly contributed to the body of knowledge, many researchers have found that no single theory fully explains the concepts of satisfaction or motivation, and a combination of multiple aspects of the various theories is often more appropriate (Landy and Becker 1987). With respect to research on the job satisfaction of federal government employees in particular, Ting (1997) determined that job satisfaction cannot be explained by any isolated set of variables. Rather, a theoretical framework must be developed that integrates multiple sets of variables to understand the interrelated determinants of the job satisfaction of public employees. Locke and Latham (2004, 389) concluded that 'there is

now an urgent need to tie these (motivation) theories and processes together into an overall model.' Research performed by Lord (2004) also suggests that the individual motivational theories should not be considered individually, but as only one part of a larger, over arching theory.

The classical theories utilized many of the same job factors, albeit in different applications, which lends itself to creating a framework of various theories that can better describe job satisfaction and work engagement in comparison to one single stand alone theory. Donovan (2001, 69) recommended after reviewing motivation theories that "future work should move towards the development and validation of an integrated model… that incorporates the important components of various theories." The job factors that consistently appeared in the literature review of job satisfaction and motivation include working conditions, salary, rewards, promotion potential, working relationships, nature of the work itself, communication, maintaining a work/life balance, and trust. A listing of these job factors and the references in which they appear was listed in Table 2.1. The satisfaction of the Civilian DoD employee with each of these job factors will be analyzed throughout this dissertation. The relative importance and relationship between each of these factors will also be explored.

H. Contradicting Literature

There have been many sources of existing literature focusing on the need to treat, engage, and manage the younger generations differently than the older due to their differing traits, characteristics, values, and ethics (Howe et al. 2000). Smola and Sutton (2002) suggested that work values were more influenced by generational differences than

by age and/or maturity. While this assumption about differing generations is widely accepted in the popular press, the majority of these sources lack the empirical, quantitative data to support their claims (Cennamo and Gardner 2008, Twenge and Campbell 2008). Furthermore, most studies that are based on empirical evidence do not support stereotypes about generational differences (Jurkiewicz 2000). "The literature on motivational differences and satisfaction levels between age cohorts is scattered" (Jurkiewicz 2000, 58). As Rhodes (1983) reported long ago, it is difficult to separate out differences attributed to generational groups that from what may in fact be differences in age (maturity), career, or life-cycle stage. A listing of relevant studies that were reviewed, along with their findings, is listed in Table 2.3. As summarized in the table, some sources reported generational differences, some sources reported that the differences were only due to age (maturity) or career stage, and other sources noted that no differences existed amongst age or generational groups. The large amount of contradicting literature on the subject serves as evidence that additional research is necessary.

Table 2.3 Listing of Relevant Studies (and Findings) in the Area of Age and/or Generational Differences in Work Factors

Source	Findings / Conclusions
Cennamo and Gardner 2008	Youngest groups placed more importance on status and freedom work values than the oldest group
Chan 2005	The work related values, beliefs, needs, aspirations, and expectations of Generation X and Generation Y are very different.
D'Amato and Herzfeldt 2008	Younger generations are less willing to remain in the same organization and have lower organizational commitment.
DiMarco, et al. 1980	Analysis of three components of expectancy theory (valenence, expectancy, and instrumentality). Significant differences were discovered between older and younger workers in outcome valence and perceived instrumentality.
Dries, et al. 2008	No significant differences were found in the satisfaction between the generations.
Glass 2007	Generations differ in areas of work ethic, managing change, and perception of organizationl hierarchy
Jurkiewicz 2000	The literature on motivational differences and satisfaction levels between age cohorts is scattered. The results of this study suggest that GenXers and Baby Boomers are more alike than different.
Jurkiewicz and Brown 1998	Few differences existed between the generations and the differences that were identified were a result from age (maturity) and career stage rather than cohort-specific generational differences.
Koenigsknecht 2002	Examination of the motivational factors of Generation X and Baby Boomer employees showed no statistical differences.
Macky, et al. 2008	Differences in attitudes towards work and careers, however little support was found in work values or motivation
NSPE 2008	Motivation factors are significantly different between older and younger engineers.
Rodriguez, et al. 2003	Baby boomers and Generation X are significantly different in the areas of fulfillment, technology, flexibility, monetary benefits, and work environment.
Smola and Sutton 2002	Generational work values do differ. Work values change as workers grow older.
Ting 1997	Age has significant effects on job satisfaction of federal government employees at GS-6 level or below, but no effect on employees at higher levels.
Williams 2004	Study found a significant difference in the attitude towards salary/extrinsic rewards and organizational commitment between Baby Boomers and Generation X Civil Servants.
Wong, et al. 2008	Results not supportive of generational stereotypes. Even when differences were observed, they were more related to age than generation. Generations were found to be motivated to a different degree in: affiliation, power, and progression.
Yang and Guy 2006	No significant differences exist in the motivation factors between the Baby Boomer generation and Generation X government employees.

I. Need for Further Research

As the Baby Boomers near retirement, Generation X is quickly rising to critical leadership positions left behind by the retiring workforce (Fillichio 2006, Yang and Guy 2006). It is imperative that managers understand how to best engage this younger generation in order to most efficiently staff the soon to be vacant positions. As discussed earlier in this chapter, the literature on the subject of age and generational related differences is very scattered, and does not provide federal managers the information they require to best engage their age-diverse workforce.

When managers and employees do not understand each other's generational differences, job satisfaction and productivity decrease (Kupperschmidt 2000). In a guest editorial, Macky (et al. 2008, 860) noted that 'there is clearly a need for more comparative studies to test the notion that generational cohorts are shaped by the significant political, economic, cultural and other events of their times.' Identifying the best ways to motivate and manage the new generations is becoming a major concern for many businesses (Dayan 2005). In particular, little research exists on the job satisfaction of government employees, especially federal government employees (Ting 1997). Once these generational differences are identified and understood, managers can take these into account when developing strategies to enhance worker motivation, productivity, and both team and organizational success (Glass 2007, Yang and Guy 2006).

CHAPTER III

RESEARCH QUESTIONS

Several questions were introduced in Chapter 1 which will be addressed in this dissertation, most of which focus on age and/or generation related differences in the DoD civilian workforce. Due to the large amount of contradicting literature on the subject, the answers to these questions determine if possible differences exist due to generational cohort, or age group. The answers will also either support or dispel the generational stereotypes in today's popular literature. Most importantly, the answers to these questions will be beneficial to federal government managers when addressing their age-diverse workforce. With a better understanding of age and generational differences, the DoD manager can best structure the workplace to better engage his/her employees and facilitate the most satisfying work environment.

The questions will be formulated into hypotheses that will be tested by statistical analyses. The hypotheses were subdivided into groups and were tested in the following order: 1) those that investigated age related differences, 2) those that investigated generation related differences, and 3) the hypothesis that investigates the relationship between job satisfaction and work engagement.

Within each age and generation related section, analyses will be performed to investigate the differences in work factor importance, level of job satisfaction, and level of work engagement. As for investigating the differences in work factor importance, the eleven selected work factors were those that consistently appeared in the literature review of job satisfaction and work engagement. They include 1) pay/salary, 2) promotion

opportunities, 3) supervision and feedback (relationship with immediate supervisor), 4) benefits, 5) recognition and rewards for good work, 6) operating policies and procedures, 7) working relationships with co-workers, 8) nature of the work itself, 9) communication within the organization, 10) trust within the organization, and 11) maintaining a work-life balance.

A. Age-Related Differences

The first set of hypotheses investigated possible age-related differences in the Civilian DoD workforce. The sample population was divided into two groups: those that were younger than 45 years old, and those that were 45 and older. This particular age threshold was chosen because it represents the mid-point in most careers, and also facilitated two similarly sized groups for comparison. This division of age groups also provided a means for specifically analyzing age-related differences, whereas the age threshold was different than the age thresholds when analyzing the generations. The age-related hypotheses to be tested are listed below:

H1: There are no differences in the importance of work factors for younger (<45 years old) and older (≥45 years old) Civilian DoD employees.

H2: There are no differences in the job satisfaction levels of younger (<45 years old) and older (≥45 years old) Civilian DoD employees.

H3: There are no differences in the work engagement levels of younger (<45 years old) and older (≥45 years old) Civilian DoD employees.

B. Generational-Related Differences

The next set of hypotheses investigated possible generation-related differences in the Civilian DoD workforce. For these analyses, the sample population was divided into three groups based upon their birth year, which was used to determine their generational cohort. The respondents that were born between 1944 and 1960 were identified as Baby Boomers, those that were born between 1961 and 1980 were identified as Generation X, and those that were born between 1981 and 2000 were identified as Generation Y. While there are several slightly differing designations of generation birth years in the literature, this particular designation was recently published by Arsenault (2004), and will serve as the birth year thresholds in these analyses. The generation-related hypotheses to be tested are listed below.

H4: There are no differences in the importance of work factors for the Baby Boomer, Generation X, or Generation Y generational cohorts of Civilian DoD employees.

H5: There are no differences in the job satisfaction levels of the Baby Boomer, Generation X, or Generation Y generational cohorts of Civilian DoD employees.

H6: There are no differences in the work engagement levels of the Baby Boomer, Generation X, or Generation Y generational cohorts of Civilian DoD employees.

C. Job Satisfaction and Work Engagement Correlation

Lastly, the relationship between job satisfaction and work engagement was of interest. Specifically, this research was designed to investigate which of the two factors could be used as a determinant of the other. Does job satisfaction drive work

engagement, or does work engagement drive job satisfaction? Therefore, the last hypothesis to be tested is listed below.

H7: The level of job satisfaction determines the extent of work engagement for Civilian DoD employees.

With the DoD facing the rising retirement eligibility of the civilian science and engineering workforce, understanding these key factors of job satisfaction and work engagement are more important now than ever. The younger generations will soon have to assume the roles and responsibilities left behind by the retiring workforce. It is important for managers of the Civilian DoD workforce to understand the job characteristics that lead to a satisfying and engaging career for these younger employees. By collecting empirical data from surveys taken scientists and engineers in the DoD workforce, research and analysis will be conducted to better understand the age and generation-related job satisfaction and work engagement factors of the DoD workforce.

CHAPTER IV

RESEARCH METHODOLOGY

A. Research Approach

This research was structured primarily to measure and analyze potential age and/or generation related differences in job satisfaction and work engagement factors of federal government employees. Separate surveys for job satisfaction and work engagement were anticipated to gather the necessary data; therefore, candidate surveys for each area were evaluated separately. Also, a short questionnaire will be included to collect data on the relative importance of the work factors of interest. These separate surveys would be compiled together to produce an aggregate survey specialized for this particular research. An introduction section would also be included to collect demographic data of the survey participants to ensure a representative sample.

B. Selection of the Satisfaction Survey Instrument

A list of survey selection criteria was developed to determine the most appropriate tool available. These survey selection criterion were 1) must be pre-existing, 2) survey must be well validated and accepted, 3) requires minimum time to complete, 4) does not require supplemental instrument, 5) can be administered online, 6) measures the factors of interest, and 7) can be correlated to theory base. Each candidate survey tool was evaluated against this criterion to determine the most appropriate instrument.

Based upon the findings of the literature review in Chapter 2, several key job satisfaction factors were identified that were consistently referenced in multiple sources. These factors included salary, benefits, promotion potential, nature of the work itself, supervision, co-workers, working conditions, recognition/feedback, trust, rewards, and work/life balance. These were the job satisfaction factors of interest in selecting a satisfaction survey.

A thorough literature review resulted in identification of five candidate job satisfaction surveys: the Minnesota Satisfaction Questionnaire (MSQ) long form, the Minnesota Satisfaction Questionnaire short form, the Job Descriptive Index (JDI), the Abridged Job Descriptive Index (AJDI), and the Job Satisfaction Survey (JSS). The JDI and MSQ were the two most extensively validated employee attitude survey measures (Saari and Judge 2004); however, each of the candidate satisfaction surveys met the threshold requirements of being a pre-existing, well validated survey instrument that was easily correlated to the theory base, and was further evaluated against the remaining criterion.

1. The Minnesota Satisfaction Questionnaire (MSQ), Long Form

The MSQ was available in two forms: a long form and a short form. Each of these surveys was designed to measure twenty facets of satisfaction; however, many of these were not relevant to this research. Additionally, in order to assess a respondent's true satisfaction, a supplemental instrument, the Minnesota Importance Questionnaire (MIQ) was recommended to accompany the MSQ. The MSQ long form consisted of 100 items and was designed to measure twenty facets of satisfaction (five questions per

facet). The long form of the MSQ was undesirable due to its length and the fact that many of the measurements were of no interest to the researcher.

2. The Minnesota Satisfaction Questionnaire (MSQ), Short Form

The MSQ short form was designed to measure the same twenty facets of satisfaction as the long form. However, this instrument only had one item for each facet. Again, many of the twenty facets of satisfaction were of little to no importance to the researcher. Additionally, the Minnesota Importance Questionnaire (MIQ) was also recommended to accompany the MSQ short form. The MIQ could not be administered online, which was undesirable since that was the planned approach for distribution of the survey instrument (Weiss et al. 1981).

3. Job Descriptive Index (JDI), Full Version

The full version of the JDI, consisting of seventy-two items, was designed to measure five distinct facets of satisfaction: work on present job, present pay, opportunities for promotion, supervision, and coworkers (each facet having either nine or eighteen items). Each of these satisfaction facets was of interest to the researcher; however, it neglected to measure the remaining six factors of interest in this particular research (benefits, nature of the work itself, working conditions, trust, rewards, and work/life balance). While the JDI could be administered online, it required use of the Job in General (JIG) survey. The JIG measured global, or overall, job satisfaction. The recommendation was to couple the JIG with the JDI, and distribute the two together (Balzer et al. 1997).

4. Abridged Job Descriptive Index (AJDI)

The abridged version of the JDI, the AJDI, consisted of twenty-five items designed to measure the same five facets of satisfaction as the full version (each facet containing 5 items). This reduced its overall length considerably while maintaining the strong reliability and predictive validity of the full version. An abridged version of the JIG was also developed to accompany the AJDI. Both versions of the JDI and JIG could be administered online (Balzer et al. 1997).

5. Job Satisfaction Survey (JSS)

The JSS was designed to measure nine distinct job satisfaction factors: pay, promotion, supervision, supervision, fringe benefits, contingent rewards, operating conditions, coworkers, nature of work, and communication, all of which were relevant to this research. The only two factors of interest for this research neglected by the JSS were trust and work/life balance. The nine factors had four items each, for a total of thirty-six items (Spector 1985).

A summary of the satisfaction survey evaluation matrix is shown in Table 4.1. As illustrated in the table, the JSS best met each of the nine criterion, whereas both versions of the MSQ and JDI did not meet certain criterion. For these reasons, the JSS was selected as the instrument to be used to collect the satisfaction measurements of the research.

The JSS is a measure of employee job satisfaction applicable to human service, public, and non-profit sector organizations. The thirty-six item instrument used a six item Likert-style rating scale, with 1 representing the strongest disagreement and 6

representing the strongest agreement. The items were written in each direction, some positive and some negative, so the negatively worded items must be reverse scored. The JSS is designed to be a stand-alone instrument without requiring a supplemental survey to collect data (Spector 1985).

Table 4.1 Evaluation of Candidate Satisfaction Surveys

Evaluation Criterion	Candidate Satisfaction Survey				
	MSQ Long Form	MSQ Short Form	JDI (Full version)	JDI (Abridged)	JSS
Pre-Existing	Yes	Yes	Yes	Yes	Yes
Well Validated	Yes	Yes	Yes	Yes	Yes
Minimum Time to Complete (number of items)	No (100 items)	Yes (20 items)	No (72 items)	Yes (25 items)	Yes (36 items)
All Questions in a Stand Alone Survey	No (May Require MIQ)	No (May Require MIQ)	No (May Require JIG)	No (May Require AJIG)	Yes
Can be Administered Online	Yes (MSQ) No (MIQ)	Yes (MSQ) No (MIQ)	No	No	Yes
Number of Facets measured	20	20	5	5	9
Measures Factors of Interest	Many factors not relevant	Many factors not relevant	Measures 5 of 11 factors of interest	Measures 5 of 11 factors of interest	Measures 9 of 11 factors of interest
Correlated to Theory Base	Yes	Yes	Yes	Yes	Yes

During the development of the JSS, Spector computed the Cronbach's alpha for each of the nine subscale items on a sample of 2,870 respondents (see Table 4.2). Test-retest reliability estimates were also computed from a relatively small sample of 43 individuals, with the same set of individuals taking the test twice at eighteen-month intervals. The preferred values of Cronbach's alpha and test-retest reliabilities are those equal to or greater than 0.7 (Benfield 2007). Means, standard deviations, Cronbach's

alpha, and test-retest reliability statistics for the nine JSS subscale items are shown in Table 4.2.

Table 4.2 Means, Standard Deviations, and Reliabilities for the JSS (Spector 1985)

Subscale	Mean	Standard Deviation	Cronbach's Alpha	Test-Retest Reliability
Pay	10.5	5.1	0.75	0.45
Promotion	11.5	5.1	0.73	0.62
Supervision	19.9	4.6	0.82	0.55
Benefits	13.1	5.0	0.73	0.37
Contingent Rewards	13.4	5.1	0.76	0.59
Operating procedures	12.5	4.6	0.62	0.74
Co-workers	18.8	3.7	0.60	0.64
Nature of work	19.2	4.4	0.78	0.54
Communication	14.0	5.0	0.71	0.65
Total Satisfaction	133.1	27.9	0.91	0.71
N	3,067	3,067	2,870	43

C. Selection of the Work Engagement Instrument

In addition to the JSS for measuring job satisfaction, another survey instrument was necessary to measure a motivation or work engagement factor. This instrument would be used to collect data necessary to investigate the relationship between job satisfaction and motivation / work engagement. Being difficult to measure, collecting data on motivation typically involves interviews or open-ended questions. The researcher discovered no pre-existing, validated survey instruments for use in quantitatively measuring motivation. However, work engagement, which explains the extent that one is immersed in their work, is quantifiably measurable. In addition, there are reputable tools for measuring work engagement, often referred to as the opposite of burnout (Schaufeli and Bakker 2003). Many of the surveys intended to measure a level of work engagement

are developed to measure the level of burnout, which is considered the opposite of the level of work engagement. Therefore, work engagement was chosen to be the measured factor for this part of the analysis, and the available tools for measurement of work engagement (or burnout) were evaluated.

A list of work engagement survey selection criterion was developed similarly to those used in selection of the satisfaction survey. The work engagement survey selection criterion included 1) must be pre-existing, 2) survey must be well validated for use in the United States, 3) requires minimum time to complete, 4) can be administered online, and 5) measures the level of engagement in one's work.

1. Maslach Burnout Inventory – General Survey (MBI-GS)

The most commonly used instrument for the measurement of burnout is the Maslach Burnout Inventory (MBI) (Schaufeli et al. 1996). Again, being as burnout is considered the opposite of work engagement, this tool was of interest for use in the subject research. A higher level of burnout is associated with lower work engagement, whereas a lower level of burnout indicates a higher work engagement. Developed specifically for use to measure a specific kind of occupational stress reaction among human services professions, the instrument measured emotional exhaustion, depersonalization, and personal accomplishment. The MBI-General Survey (GS) is a modified version of the MBI, which addresses burnout in a generic sense, not specifically for use in human services professions. The MBI-GS was broadened to include three more generic burnout dimensions that were labeled exhaustion, cynicism, and professional efficacy (Bakker, et al. 2002).

The major shortcoming identified with this instrument was that all items in each subscale are worded in the same direction. All exhaustion and cynicism items are worded negatively, whereas all professional efficacy items are worded positively (Demerouti et al. 2003). One-sided scales such as these are inferior to scales that include both positively and negatively phrases items (Anastasi 1988). Therefore, the MBI-GS was undesirable for use as an instrument in this research.

2. Oldenburg Burnout Inventory (OLBI)

The Oldenburg Burnout Inventory (OLBI) was developed in Germany by Demerouti, Bakker, Vardakou, and Kantas (2003) to assess the two core dimensions of burnout: exhaustion and disengagement from work. Exhaustion refers to 'general feelings of emptiness, overtaxing from work, a strong need for rest, and a state of physical exhaustion,' and disengagement refers to 'distancing oneself from the object and the content of one's work and to negative, cynical attitudes and behaviors toward one's work in general' (Demerouti et al. 2003, 17). Unlike the MBI-GS, the OLBI included both positively and negatively phrased items.

However, both the MBI-GS and OLBI were designed to measure the degree of physical burnout moreso than one's intellectual engagement or mental absorption in his or her work, which would be more relevant for this research. Given these shortcomings, neither the MBI-GS or the OLBI were considered appropriate instruments for use in this research.

3. Utrecht Work Engagement Scale (UWES)

The Utrecht Work Engagement Scale (UWES) was developed in the Netherlands by Schaufeli and Bakker (2003) to measure a characteristic entitled work engagement, assumed to be the opposite of burnout. Three primary versions of the UWES were developed: UWES-17 consisting of seventeen items, UWES-15 consisting of fifteen items, and UWES-9 consisting of nine items. Each of these instruments measured three components of work engagement: vigor, dedication, and absorption (Schaufeli and Bakker 2003).

The original version of the UWES was developed using a Dutch language database, but Schauefeli and Bakker also investigated the psychometric properties of the UWES using an international database, consisting of a diverse population from various occupational groups and countries. A total of 12,631 data points was compiled from nine countries to formulate the international database. The internal consistency (coefficient alpha) was calculated using the entire sample population, while the test-retest reliabilities (internal consistency) were calculated using samples from Australia and Norway. Table 4.3 shows the internal consistency, test-retest reliability, and norms of the international UWES database. Again, values equal to or greater than 0.7 are preferred for cronbach's alpha and test-retest reliability statistics (Benfield 2007).

Table 4.3 Means, Standard Deviations, and Reliabilities for the International UWES-17 (Schaufeli and Bakker 2003)

Subscale	Mean	Standard Deviation	Cronbach's Alpha	Test-Retest Reliability (AUS)	Test-Retest Reliability (NOR)
Vigor	4.24	1.09	0.82	0.64	0.71
Dedication	4.33	1.36	0.89	0.58	0.69
Absorption	3.77	1.28	0.83	0.58	0.69
Total	4.10	1.11	0.93	0.63	0.72
N	12,631	12,631	12,631	293	563

Unlike the MBI-GS and the OLBI, the UWES specifically measures work engagement rather than burnout. Even though work engagement has been described as the opposite of burnout, the measured factors in the UWES represent a more positive intellectual engagement into one's work, whereas the other two instruments measure a negative physical stress or exhaustion related to one's work. Since the connection between positive work engagement and job satisfaction was of interest for this research, the UWES was considered the best suited instrument for collection of the data for this part of the research. A summary of the evaluation criterion used in selection of a work engagement survey is listed in Table 4.4.

Table 4.4 Evaluation of Candidate Work Engagement Surveys

Evaluation Criterion	Candidate Work Engagement Survey		
	MBI-GS	OLBI	UWES
Pre-Existing	Yes	Yes	Yes
Well Validated	Yes	Yes	Yes
Minimum Time to Complete (number of items)	Yes	Yes	Yes
Can be Administered Online	Yes	Yes	Yes
Measures Level of Work Engagement	No	No	Yes

D. Demographic Questions

In order to ensure that the sample population was representative of the Civilian DoD workforce, a number of demographic questions were asked at the beginning of the survey instrument. These questions included gender, age group, job category, education level, number of years in Government service, and ethnicity. The ethnicity response was optional, whereas all other demographic questions were required. The age groups were listed in five year intervals, and were construed such that the age group response could be assigned to the Baby Boomer, Generation X, or Generation Y generations accordingly.

E. Work Factor Importance Questionnaire

While the JSS and UWES were designed to be stand-alone satisfaction surveys, some sources in the literature review indicated that the various generations not only differed in levels of satisfaction and/or work engagement, but also as to which factors were most important to that population. In order to capture this particular aspect, a short questionnaire of eleven items was incorporated at the end of the survey. The survey participants were asked to indicate the level of importance on a five-point Likert scale (Least important, less important, neutral, more important, most important) for each of the eleven job factor items listed. The eleven items consisted of the nine satisfaction factors measured in the JSS (pay, promotion opportunities, supervision/feedback, fringe benefits, recognition/rewards, operating policies and procedures, nature of the work itself, communication within the organization), along with two additional factors of interest that were reported to differ amongst the generations: trust within the organization, and

maintaining a work/life balance (Koenigsknecht 2002, Dayan 2005, Glass 2007). The full survey instrument used in this research project is included in Appendix A.

F. Pilot Study

Once the survey instrument was developed, the complete four-part survey (demographic questions, JSS, UWES, and importance questionnaire) was established online and sent to approximately forty local scientists and engineers in the defense industry. The respondents were asked to participate in a voluntary pilot study by completing the online survey and also providing feedback to the researcher concerning any errors or questions about the survey instrument. A total of twenty-seven respondents from a research and development facility participated in the pilot study.

Since the online survey database recorded the start and finish times of each participant, the length of time to complete the survey was examined. The duration of times ranged from six to fourteen minutes, with the average being nine minutes. This information would later be used in the request for participation in the final survey. Also, one of the respondents in the pilot study revealed an error in the original survey. The 55-59 age group selection was missing from the age groups in the demographic questions. This error was corrected for the final survey instrument.

The results of the pilot survey suggested that age-related difference did exist, although due to the small sample size obtained, no differences were statistically significant at the alpha = 0.05 level. However, the overall trends of the data suggested that age related differences did exist, and the results of the pilot study warranted the collection of a larger sample population and continuation of the full research project.

G. Distribution of the Final Test Instrument

The four-part final survey, consisting of the demographic questions, JSS, UWES, and importance questions were combined into a single instrument as shown in Appendix A and uploaded to an online survey tool website. The names of each specific tool (i.e., JSS, UWES, etc.) were removed to prevent potential biases that might have arisen by associating a survey with feelings of satisfaction and work engagement. A hyperlink to the website was then established that could be emailed to the survey participants.

An online survey was desired for easy distribution across a large and diverse population, and for ease of data reduction and management. However, the validity of surveys administered online is often questioned. Studies conducted by Sax et al. (2008) examined response rates and bias among college students who received a survey by standard mail or email, and found that the results were not appreciably different between the two methods of distribution when the samples were matched in terms of key demographics. Another study by Dolnicar et al. (2009) also compared online surveys versus paper surveys administered by regular mail. Their results suggested that no differences existed in the contamination by response styles, and in fact online respondents had a lower dropout rate and produced less incomplete data when compared to paper surveys. Based on the findings from these studies, the researcher concluded that the online survey method was the best approach for distribution to the sample population.

This research was structured to investigate the age and/or generation-related differences in the Civilian DoD employee, primarily scientists and engineers. The research and development component of the United States (U.S.) Army, entitled the U.S.

Army Research, Development, and Engineering Command (RDECOM) was selected as a the population of interest. RDECOM workforce age demographics were collected from the September 2009 Career Program sixteen (CP-16) Planning Board. CP-16 consisted of Civilian RDECOM employees in the scientist and engineering career fields.

Employees at the U.S. Army Aviation Missile, Research, and Development, and Engineering Center (AMRDEC) at Redstone Arsenal, Alabama, were chosen as the sample population to survey in this research due to the researcher's immediate access and employment status at the organization. The demographics of AMRDEC Scientist and Engineers (S&Es) closely mirrored that of the RDECOM CP-16 workforce (see Figure 4.1), and were also considered representative of the larger Civilian DoD population.

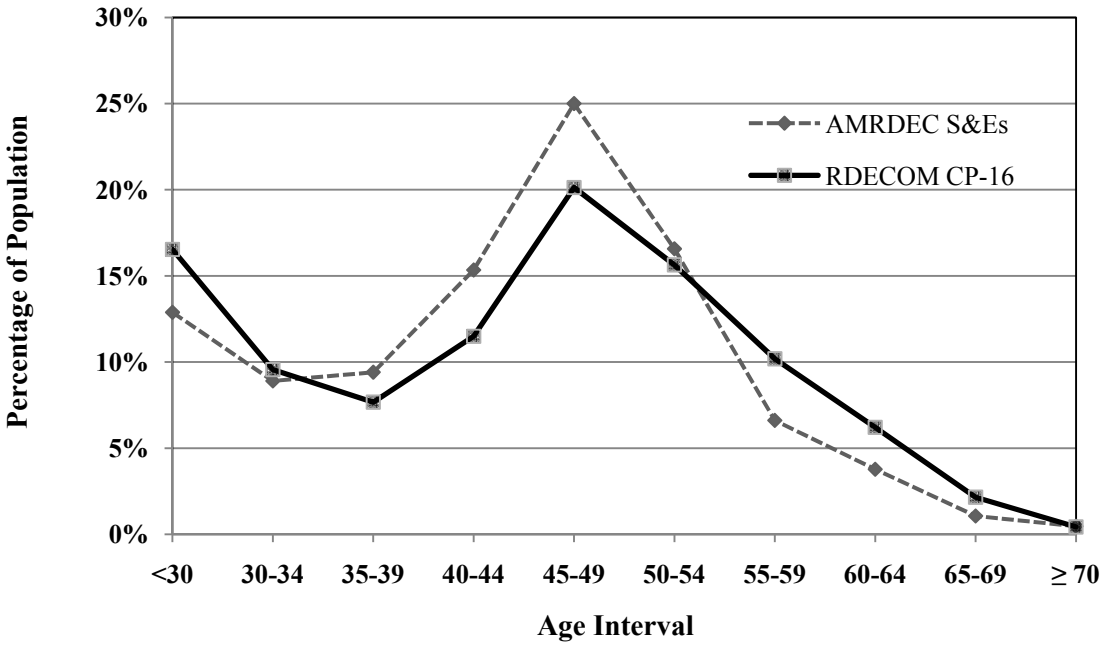

Figure 4.1 Age Distribution of AMRDEC S&E (n=2360) and RDECOM CP-16 (n=17,041) Workforce

Of notable interest were the two distinct peaks in the age demographics of both RDECOM and AMRDEC. These peaks represented the two dominant age groups in the workforce, which was the basis for comparison and contrast throughout this research.

The AMRDEC directors, associate directors, and function chiefs each emailed a request for participation with the link to the online survey to their respective workforce. The survey request was distributed via email to a total of approximately 900 readily accessible civilian government employees, most of which were scientists and engineers. The participants of the survey were assured that their responses to the survey were voluntary and would be completely anonymous.

H. Timing of the Survey

The request for participation in the online survey was distributed in early December 2009. Many civilian government employees had a large amount of annual leave to use before the end of the calendar year and anticipated being off work during the holiday season, so the request was sent prior to the majority of employees beginning their vacations. The majority of the participants completed the survey in December 2009, whereas approximately twenty were completed in January 2010. The online survey link was closed on February 1, 2010.

The 2009 calendar year was a time of national and global economic instability. The Dow Jones Industrial Average (DJIA) hit a ten-year low at 6,547 on March 9th, 2009, down over 53% from a decade high of 14,164 in October 2007 (Google Finance 2010). The unemployment rate in the United States soared to 10% in December 2009, up from 5% just two years prior (Bureau of Labor Statistics 2010). While these trying economic

times may have had an effect on the transient nature of satisfaction responses, no attempt was made by this research to capture the effect of the environment on the responses from the participants.

The researcher expected to obtain a minimum of 250 data points from the online survey. After collection, these data would be analyzed for age and generation-related differences in satisfaction, work engagement, and importance of job factors. Identifying the key age-related differences in these factors would empower the managers in the DoD workforce with the knowledge necessary to most efficiently transition the roles and responsibilities left behind by the retiring workforce to the younger generations of employees.

CHAPTER V

RESEARCH RESULTS

This research project was developed to assist federal government managers in determining how Civilian DoD employees differ in their job satisfaction and work engagement based on their age and generation. With this information, the manager could then understand how the generations differ and how an employee's needs possibly change as they grow older. A test instrument was compiled using pre-existing, well validated surveys to collect the necessary data of interest. Upon receipt and analysis of the data, several important discoveries were made, some of which debunked many of the popular generalizations and stereotypes about generational traits.

The request for participation in the online survey was distributed via email to approximately 900 government employees at U.S. Army AMRDEC during the months of December 2009 and January 2010. A total of 307 responses was collected via the online survey tool. Of these 307 responses, 277 responses were used to test the research hypothesis in this dissertation. Thirty responses were entirely removed from the data set before any statistical analyses were conducted. These survey participants failed to answer all of the questions in the JSS or UWES portions of the survey. Of the remaining 277 responses, thirty four responses were missing the answers to the last survey section, where the respondents were asked to select the importance of each job factor. However, the completed JSS and UWES sections from these responses were used in the analyses of

those sections, respectively. Only 243 responses were used in the analyses of the job factor importance questions.

The survey responses were downloaded from the online survey tool directly into a Microsoft Excel spreadsheet. The responses to the JSS and UWES sections of the surveys were then scored as described in their respective user manuals. Negatively worded questions were reverse scored, and the summed totals for each of the measured constructs were computed, along with the totals for overall satisfaction and work engagement. The resulting Excel spreadsheet was then imported into SPSS version 17 for further statistical analyses.

A. Demographics of Respondents

The final dataset, after filtering incomplete responses, consisted of 277 responses. Of these 277 responses, 211 (76.2%) were male, and 66 (23.8%) were female. The distribution of the highest education level of the respondents was 130 (46.9%) with a Bachelor's degree, 105 (37.9%) with a Master's degree, twelve (4.3%) with a doctorate degree, nine (3.2%) with an Associate's degree, and twenty-one (7.6%) with a high school diploma. Ethnicity of the respondents was 247 (89.2%) white, nine (3.2%) black, three (1.1%) asian, two (0.7%) Hispanic, three (1.1%) other, and thirteen (4.7%) no response. Each of the demographic results is consistent with the overall demographics of the Civilian DoD workforce. The age group demographic of the sample population is displayed in Figure 5.1.

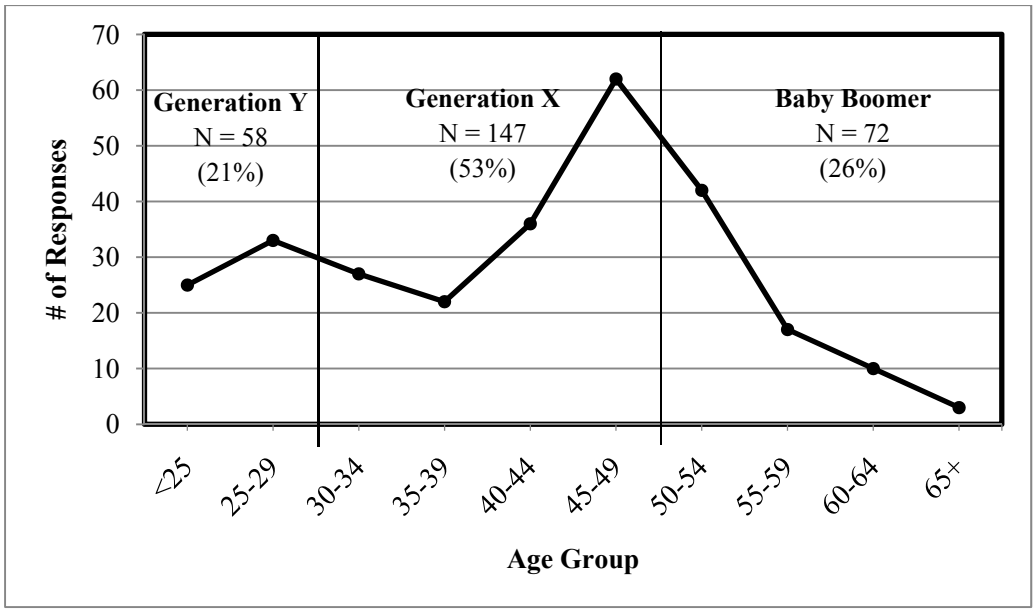

Figure 5.1 Age/Generation Demographics of Sample Population

The overall trend of the age demographic, with the two peaks, is representative of the age demographic of the entire civilian DoD scientist and engineer workforce. A comparison of sample population, AMRDEC Scientist & Engineer (S&E), and RDECOM Career Program-16 (CP-16) age demographics is listed in Table 5.1.

Table 5.1 Age Demographics Comparison (Sample vs. Population)

Age Group	Sample Population		AMRDEC S&Es		RDECOM CP-16	
	n	%	n	%	n	%
<30	58	20.9%	304	12.9%	2818	16.54%
30-34	27	9.7%	210	8.9%	1629	9.56%
35-39	22	7.9%	222	9.4%	1307	7.67%
40-44	36	13.0%	362	15.3%	1958	11.49%
45-49	62	22.4%	590	25.0%	3430	20.13%
50-54	42	15.2%	391	16.6%	2665	15.64%
55-59	17	6.1%	156	6.6%	1736	10.19%
60-64	10	3.6%	89	3.8%	1058	6.21%
65-69	2	0.7%	25	1.1%	367	2.15%
≥ 70	1	0.4%	11	0.5%	73	0.43%
Total	277	100.0%	2360	100.0%	17041	100.00%

B. Data Analyses

The data analyses of this research project were divided into two primary sections. The first part of the analyses was conducted using Multivariate Analysis of Variance (MANOVA) and one-way Analysis of Variance (ANOVA) analyses to determine any statistical differences in the independent variable of interest. During this portion of the research, age and generation were each separately analyzed as the independent variable. MANOVA tests the hypothesis that the means of two independent variables is equal across multiple simultaneous dependent variables. ANOVA further tests the hypothesis that the samples from two or more independent variables have equal means. The analysis of variance procedures are based on three primary assumptions:

1. Normality - The distribution of errors (residuals) for the dependent variable(s) is univariate normal in ANOVA tests and multivariate normal in MANOVA tests.
2. Independence - The errors (residuals) are statistically independent and uncorrelated.
3. Equal variances/covariances – The variances of dependent variables must be equal across groups in ANOVA tests, and the covariances of dependent variable pairs must be equal across groups in MANOVA tests.

The Anderson-Darling statistic was used to test the normality assumption (see Appendix B). Being as the data collected for this research was based on an ordinal Likert scale, the errors were not always normally distributed. However, Lumley et al. (2002) show that the violation of the normality assumption is only of concern for small sample sizes less than 100. In larger samples such as the sample population in this research, the

t-tests such as ANOVA and MANOVA are valid for any distribution, not just those with normal distributions (Lumley et al. 2002).

The second part of the analyses was done using Structural Equation Modeling (SEM) to graphically illustrate the path analysis of job factor constructs. This analysis was then used to determine the relationship between job satisfaction and work engagement. SPSS version 17 statistical software was used for both sections of the analysis, and the SPSS AMOS™ add-in was used in the SEM portion of the analyses.

C. Factor Analyses

Factor analyses were performed on the data set to determine the number of factors measured by the surveys administered. The factor analyses were subdivided into two sections: the first analyzed the 36 items from the Job Satisfaction Survey, while the second analyzed the 17 items from the Utrecht Work Engagement Scale. These analyses were performed to ensure that the questions were measuring the intended factors. Those questions that did not load on the intended factor were removed. The maximum likelihood estimation method was used to be consistent with the analyses that would later be performed in the structural equation modeling effort. The factor analyses were performed with Varimax rotation and were based on factors with eigen values ≥ 1.0, a threshold originally proposed by Kaiser (1960) and commonly used in factor analyses.

1. Factor Analysis of Job Satisfaction Survey Items

The JSS was designed to measure nine factors of interest (Spector 1985). When analyzing the sample data collected in this research for the 36 items from the JSS section

of the test instrument, many items cross-loaded onto multiple factors during the initial factor analysis. Individual survey items that did not load on the appropriate factor were removed and the factor analysis was conducted again. This process was continued until the remaining JSS items grouped together appropriately, consistent with the JSS manual. This ensured that the remaining JSS items accurately measured the specific factors of job satisfaction.

The resulting factor analysis of the remaining JSS items had six factors, as shown in Table 5.1. Factor loadings less than 0.4 were suppressed for clarity, as this lower threshold value is commonly used in factor analyses (Hulland 1999). All of the questions designed to measure satisfaction with operating conditions and contingent rewards were removed since the items were confounding. Items related to satisfaction with promotion potential and satisfaction with salary converged to one factor, which seemed reasonable as these two factors are similar in nature and both measured satisfaction with monetary aspects. One item, JSS # 34, which states "There is too much bickering and fighting at work," was intended to measure satisfaction with communication, although for this sample data, this item loaded with the factor measuring satisfaction with coworkers. Therefore, this item was kept in the sample dataset, but was grouped with the coworker questions, as the nature of the question does also apply to coworkers. The groupings of the remaining twenty-seven JSS items shown in Table 5.2, which explained 57.14% of the variance in the JSS dataset, were used for all of the subsequent analyses in this research.

Table 5.2 Final Factor Analysis of JSS Items (Varimax Rotation)

		Factor					
	JSS Item #	1	2	3	4	5	6
Benefits	JSS-4					0.435	
	JSS-13					0.821	
	JSS-22					0.799	
	JSS-29					0.524	
Communication	JSS-9			0.677			
	JSS-18			0.704			
	JSS-26			0.618			
	JSS-36			0.48			
	JSS-34*			0.516			
Co-workers	JSS-7						0.89
	JSS-25						0.579
Nature of Work	JSS-8		0.528				
	JSS-17		0.775				
	JSS-27		0.66				
	JSS-35		0.862				
Promotion Potential	JSS-2	0.555					
	JSS-11	0.57					
	JSS-20	0.56					
	JSS-33	0.772					
Pay / Salary	JSS-1	0.628					
	JSS-10	0.605					
	JSS-19	0.588					
	JSS-28	0.722					
Supervision	JSS-3				0.698		
	JSS-12				0.565		
	JSS-21				0.644		
	JSS-30				0.762		

* JSS-34 was intended to measure co-workers, but was grouped with communication

2. Factor Analysis of Utrecht Work Engagement Scale Items

The UWES was designed to measure three factors of work engagement: absorption, dedication, and vigor. When analyzing the sample data from the 17 items of the UWES section of the survey instrument, the initial factor analysis converged upon two factors with eigenvalues > 1.0. The items designed to measure dedication and the items designed to measure vigor all loaded onto the same factor. Several items loaded onto both factors similarly causing confounding and were removed. Additionally, one of the vigor items did not load strongly on either factor, so it was also removed. The groupings in the resulting factor analysis of the remaining twelve UWES items, as shown in Table 5.3, were used for the subsequent analyses of work engagement. Again, factor loadings less that 0.4 were suppressed for clarity (Hulland 1999). Cumulatively, these two factors explained 61.2% of the variance in the UWES dataset.

Table 5.3 Final Factor Analysis of UWES Items (Varimax Rotation)

		Factor	
		1	2
Absorption	UWES-6		0.584
	UWES-14		0.772
	UWES-16		0.575
Dedication	UWES-2	0.83	
	UWES-5	0.88	
	UWES-7	0.815	
	UWES-10	0.725	
	UWES-13	0.647	
Vigor	UWES-1	0.674	
	UWES-4	0.777	
	UWES-8	0.759	
	UWES-15	0.599	

D. Reliability Analysis

Prior to the analysis and interpretation of data results, a reliability analysis was performed to calculate Cronbach's alpha using the survey items grouped together as described in the previous section. The Cronbach's alpha statistic is used as a measure of internal consistency or reliability of a psychometric test score for a sample population. Internal consistency describes how closely related a set of items are as a group. Ranging from zero to 1.0, whereas higher coefficients are better, a reliability coefficient of .70 or higher is considered acceptable in most social science research situations (Field 2005). A high value of alpha often serves as evidence the items are measuring an underlying

construct (SPSS 2006). The Cronbach's alpha for the groupings of items measured with the survey instrument are listed in Table 5.4.

Table 5.4 Cronbach's Alpha Coefficients for Survey Instrument Factors

Factor	Number of Items	Cronbach's Alpha
Benefits	4	0.757
Communication	5	0.823
Co-Workers	2	0.845
Nature of Work	4	0.847
Pay / Promotion	4	0.84
Supervision	4	0.835
Absorption	3	0.73
Dedication & Vigor	9	0.939

As shown in the above table, each of the survey factors demonstrated a high level of reliability, with Cronbach's alpha values ranging from 0.73 to 0.939. Based upon the results of the factor analysis and reliability analysis, there was a high level of confidence that the groupings of survey items were representing the job factors of interest.

E. Age-Related Differences

To address the first three research questions (hypotheses) dealing with age-related differences in the DoD Civilian workforce, the survey results were divided into two groups: a younger group consisting of respondents up to 44 years old, and an older group consisting of those 45 years old and older. This age threshold divided the sample population into two groups of similar size, and was also considered a representative threshold for the midpoint in Civilian DoD careers. Each of the below analyses of age-related differences used these two age groups.

1. Work Factor Importance

Hypothesis 1 was 'there are no differences in the importance of work factors for younger (<45 years old) and older (≥45 years old) Civilian DoD employees.' To test this hypothesis, the results from the eleven survey questions in the importance section were analyzed for the two age groups using MANOVA. The MANOVA analysis resulted in an F value of 2.51, and a p value of <0.01. Therefore, Hypothesis 1 was rejected.

Next, a one-way ANOVA was performed using age as the independent variable to determine which specific work factors differed significantly in importance between the younger and older groups. The results from the work factor importance ANOVA are listed in Table 5.5. The results indicated that promotion opportunities, working relationships with co-workers, communication within the organization, and maintaining a work/life balance were all significantly different in terms of importance between the two age groups. As one would expect, the younger group placed more importance on promotion opportunities, as many of the older employees have already reached their promotion potential. The younger group also placed more importance on maintaining a work/life balance, which supports the findings in the literature review. The older group of employees placed more importance on working relationships with co-workers, and communication within the organization.

Table 5.5 ANOVA of Work Factor Importance (Age Group is Independent Variable)

	Age Under 45 (N=122)		Age 45 & Older (N=121)				
Work Factor (Importance)	**Mean**	**Std Dev**	**Mean**	**Std Dev**	**Delta**	**F**	**P***
Pay / Salary	4.13	0.60	4.05	0.76	0.08	0.86	0.36
Promotion opportunities	3.85	0.75	3.55	1.02	0.30	6.83	**0.01**
Supervision and feedback (Relationship with immediate supervisor)	3.91	0.75	3.84	0.89	0.07	0.40	0.53
Benefits	3.92	0.68	4.01	0.77	-0.09	0.94	0.33
Recognition & rewards for good work	3.72	0.77	3.86	0.78	-0.14	1.93	0.17
Operating policies and procedures	3.01	1.02	3.25	1.06	-0.24	3.22	0.07
Working relationships with coworkers	3.91	0.82	4.12	0.73	-0.21	4.62	**0.03**
Nature of the work itself	4.17	0.75	4.26	0.78	-0.08	0.74	0.39
Communication within the organization	3.44	0.95	3.68	0.84	-0.24	4.20	**0.04**
Trust within the organization	3.92	0.83	4.07	0.87	-0.15	1.84	0.18
Maintaining a work / life balance	4.57	0.69	4.36	0.85	0.21	4.50	**0.03**

*Shaded cells indicate significantly different results at α=0.05 level

2. Job Satisfaction Survey

Hypothesis 2 was 'there are no differences in the job satisfaction levels of younger (<45 years old) and older (≥45 years old) Civilian DoD employees.' To test this hypothesis, the results from the Job Satisfaction Survey were analyzed for the two age groups using MANOVA. The MANOVA analysis resulted in an F value of 2.78, and a p value of 0.012. Therefore, Hypothesis 2 was rejected.

Next, a one-way ANOVA was performed using age as the independent variable to determine which specific factors in the Job Satisfaction Survey were significantly different between the younger and older groups, as shown in Table 5.6. The only significantly different JSS factor between the two age groups was co-workers (p=0.012).

The older group reported a higher satisfaction with co-workers (10.63) than the younger group (10.14). Satisfaction levels with the nature of work also differed amongst the age groups, although just above the alpha = 0.05 threshold (p value =0. 064). The older group reported higher satisfaction with the nature of work (19.50) than the younger group (18.61). However, the overall total satisfaction levels (total possible score of 216) was similar for both age groups.

Table 5.6 ANOVA of JSS Factors (Age Group is Independent Variable)

	Age Under 45 (N=143)		Age 45 & Older (N=134)				
JSS Factor	**Mean**	**Std Dev**	**Mean**	**Std Dev**	**Delta**	**F**	**P***
Salary & Promotion	33.62	7.30	32.31	8.60	1.30	1.85	0.175
Supervision	20.63	3.61	20.40	3.64	0.23	0.27	0.604
Fringe Benefits	17.43	3.69	17.54	4.08	-0.11	0.05	0.824
Co-workers	10.14	1.77	10.63	1.47	-0.49	6.35	**0.012**
Nature of Work	18.61	4.04	19.50	3.94	-0.89	3.45	0.064
Communication	18.73	5.16	19.26	4.70	-0.53	0.69	0.407
Total Satisfaction	152.83	25.38	152.78	25.96	0.05	0.00	0.987

*Shaded cells indicate significantly different results at α=0.05 level

3. Utrecht Work Engagement Scale

Hypothesis 3 was 'there are no differences in the work engagement levels of younger (<45 years old) and older (≥45 years old) Civilian DoD employees.' To test this hypothesis, the results from the Utrecht Work Engagement Scale based on the groupings of items from the factor analysis were analyzed for the two age groups using MANOVA.

The MANOVA analysis resulted in an F value of 5.397, and a p value of <0.01. Therefore, Hypothesis 3 was rejected.

Next, a one-way ANOVA was performed using age as the independent variable to determine which specific items in the Utrecht Work Engagement Scale were significantly different between the younger and older groups. The results indicated that both work engagement factors (vigor & dedication, and absorption) and the overall level of work engagement were significantly different between the younger and older groups. In each case, the older age group was more engaged than the younger age group. The ANOVA results for the UWES are listed in Table 5.7.

Table 5.7 ANOVA of UWES Factors (Age Group is Independent Variable)

	Age Under 45 (N=143)		Age 45 & Older (N=134)				
UWES Factor	**Mean**	**Std Dev**	**Mean**	**Std Dev**	**Delta**	**F**	**P***
Dedication & Vigor	33.74	9.20	37.14	9.44	-3.4	7.403	**0.007**
Absorption	9.36	3.24	10.45	3.39	-1.09	9.217	**0.003**
Total Work Engagement	64.11	14.91	70.27	15.38	-6.16	11.442	**.001**

*Shaded cells indicate significantly different results at α=0.05 level

F. Generational-Related Differences

Since the survey was administered from December 2009-January 2010, it was assumed that each of the survey participants had already had a birthday in 2009, but had not had one in 2010. This enabled an age estimation for each survey participant. Since the age group categories in the demographic question of the survey were structured such that each could be assigned into one of the three generational groups, the survey responses were categorized into the appropriate generation groups according to the estimated birth year. Once the responses were categorized by generation, a similar

analysis to that performed to analyze age-related differences was conducted, again separated into work factor importance, JSS, and UWES sections.

1. Work Factor Importance

Hypothesis 4 was 'there are no differences in the importance of work factors for the Baby Boomer, Generation X, or Generation Y generational cohorts of Civilian DoD employees.' To test this hypothesis, the results from the eleven survey questions in the importance section were analyzed for the generation groups using MANOVA. The MANOVA analysis resulted in an F value of 2.063 (using Wilks' Lambda statistic), and a p value of <0.01. Therefore, Hypothesis 4 was rejected.

Next, a one-way ANOVA was performed using generation as the independent variable to determine which specific work factors differed significantly in importance amongst the generations. The results are shown in Table 5.8.

Two factors differed significantly in importance amongst the generations, promotion opportunities ($p<0.01$) and maintaining a work/life balance ($p=0.02$). It is rational that promotion opportunities were much more important to Generation Y (mean importance of 4.22) than the older generations (mean importance of 4.06 and 4.04 for Generation X and Baby Boomers, respectively), who have most likely already risen to their promotion potential or are on track with their later career progression. As for the importance of maintaining a work/life balance, this factor was also expected to differ significantly based on the findings of the literature review in Chapter 2. Consistent with the literature review, the younger generations placed more importance on maintaining a

work/life balance than the older generation (mean importance of 4.63, 4.51, and 4.25 for Generation Y, Generation X, and Baby Boomers, respectively).

Table 5.8 ANOVA of Work Factor Importance (Generation is Independent Variable)

	Generation Y (n=51)		Generation X (n=124)		Baby Boomer (n=68)			
Work Factor Importance	**Mean**	**Std Dev**	**Mean**	**Std Dev**	**Mean**	**Std Dev**	**F**	**P***
Pay / Salary	4.22	0.61	4.06	0.71	4.04	0.70	1.09	0.34
Promotion opportunities	4.02	0.68	3.71	0.83	3.46	1.08	5.94	**<0.01**
Supervision and feedback (Relationship with immediate supervisor)	4.06	0.70	3.83	0.86	3.82	0.81	1.61	0.20
Benefits	3.82	0.79	4.00	0.67	4.00	0.75	1.20	0.30
Recognition & rewards for good work	3.67	0.79	3.81	0.74	3.85	0.83	0.89	0.41
Operating policies and procedures	3.25	1.04	3.01	1.07	3.25	1.00	1.66	0.19
Working relationships with coworkers	3.86	0.80	4.04	0.82	4.09	0.69	1.33	0.27
Nature of the work itself	4.14	0.80	4.26	0.73	4.19	0.80	0.49	0.61
Communication within the organization	3.55	0.94	3.50	0.90	3.68	0.87	0.85	0.43
Trust within the organization	3.98	0.84	4.01	0.84	3.97	0.90	0.05	0.95
Maintaining a work / life balance	4.63	0.60	4.51	0.72	4.25	0.95	3.99	**0.02**

*Shaded cells indicate significantly different results at α=0.05 level

To better determine the differences in work factor importance, Tukey's Honestly Significant Difference (HSD) test was performed on the two significantly different factors. This test determined which of the specific generational groups differed significantly with one another. The results of this analysis are shown in Figure 5.9. The importance of each of these two factors differed significantly between the Generation Y and Baby Boomer generations. Promotion potential and maintaining a work/life balance were both more important to Generation Y than Baby Boomers. The mean importance

level of these factors to Generation X was within the bounds of those from Generation Y and Baby Boomer generations, but did not differ significantly with either of the other two generations.

Table 5.9 Tukey's HSD Test on Work Factor Importance (Generation is Independent Variable)

Work Factor Importance	(I) Generation	(J) Generation	Mean Difference (I-J)	Std. Error	Sig.*
Promotion Potential	Generation Y	Generation X	.310	.147	.090
		Baby Boomer	.564*	.164	**.002**
	Generation X	Generation Y	-.310	.147	.090
		Baby Boomer	.254	.133	.140
Maintaining a Work/Life Balance	Generation Y	Generation X	.119	.128	.619
		Baby Boomer	.377*	.142	**.023**
	Generation X	Generation Y	-.119	.128	.619
		Baby Boomer	.258	.116	.069

*Shaded cells indicate significantly different results at α=0.05 level

2. Job Satisfaction Survey

Hypothesis 5 was 'there are no differences in the job satisfaction levels of Baby Boomer, Generation X, or Generation Y generational cohorts of Civilian DoD employees.' To test this hypothesis, the results from the Job Satisfaction Survey were analyzed for the three generational groups using MANOVA. For this analysis, Generation Y had 58 responses, Generation X had 147 responses, and the Baby Boomer generation had 72 responses. The MANOVA analysis resulted in an F value of 1.55 (using the Wilks' Lambda statistic), and a p value of 0.102. Therefore, Hypothesis 5 was not rejected.

While the overall level of job satisfaction did not differ significantly amongst the generations, the individual factors were still analyzed. A one-way ANOVA was performed using generation as the independent variable to determine if specific factors in the Job Satisfaction Survey were significantly different amongst the generations. The results of the JSS ANOVA using generation as the independent variable are shown in Table 5.10.

Table 5.10 ANOVA of JSS Factors (Generation is Independent Variable)

	Generation Y (n=58)		Generation X (n=147)		Baby Boomer (n=72)			
JSS Factor	**Mean**	**Std Dev**	**Mean**	**Std Dev**	**Mean**	**Std Dev**	**F**	**P***
Pay and Promotion	33.48	6.47	32.97	7.73	32.61	9.47	0.19	0.83
Supervision	20.90	2.78	20.40	3.87	20.46	3.72	0.40	0.67
Fringe Benefits	17.88	3.19	17.01	4.042	18.14	3.951	2.47	0.09
Co-workers	10.22	1.48	10.26	1.83	10.75	1.33	2.50	0.08
Nature of Work	19.02	3.25	18.55	4.291	20.06	3.816	3.47	**0.03**
Communication	18.98	4.41	18.84	5.32	19.29	6.12	0.17	0.84
Total Satisfaction	154.60	22.13	150.57	26.093	155.90	27.111	1.23	0.29

*Shaded cells indicate significantly different results at α=0.05 level

While the MANOVA results did not suggest a significant difference across all factors, when using ANOVA to investigate each factor separately, the satisfaction level with the nature of work was significantly different (p=0.03) amongst the generations at the alpha = 5% level. Two other factors, fringe benefits and co-workers, also had relatively small p values (0.09 and 0.08, respectively), and would have been statistically significant at the alpha = 10% level. Since the ANOVA analysis only determined if at least one of the three generations had a significantly different mean, Tukey's HSD test

was then performed on the nature of work factor to determine which specific generations were statistically significantly different. Tukey's HSD test assumes each of the groups has equal variances, a normally distributed mean, and is an independent sample. The results from Tukey's HSD test are shown in Table 5.11.

Table 5.11 Tukey's HSD Test on JSS Factors (Generation is Independent Variable)

Dependent Variable	(I) Generation	(J) Generation	Mean Difference (I-J)	Std. Error	Sig.*
NATUREOF WORK	Generation Y	Generation X	.466	.616	.730
		Baby Boomer	-1.038	.701	.301
	Generation X	Generation Y	-.466	.616	.730
		Baby Boomer	-1.505*	.571	**.024**

*Shaded cells indicate significantly different results at α=0.05 level

When reviewing the results from Tukey's HSD test with respect to the satisfaction with the nature of work, Generations X and Baby Boomers differed significantly (p=0.024), whereas Generations X vs Y or Generation Y vs Baby Boomers had no significant differences. The Baby Boomer generation reported the highest satisfaction (20.06) with the nature of their work, with Generation Y reporting the second most satisfaction (19.02), and Generation X reporting the least satisfaction (18.55) with the nature of their work. This may be explained by the fact that most Baby Boomers are in the later stages of their career and have had the chance to settle into a job in which they are satisfied with the nature of the work.

3. Utrecht Work Engagement Scale

Hypothesis 6 was 'there are no differences in the work engagement levels of Baby Boomer, Generation X, or Generation Y generational cohorts of Civilian DoD employees.' To test this hypothesis, the results from the Utrecht Work Engagement Scale were analyzed for the three generational groups using MANOVA. The MANOVA analysis resulted in an F value of 1.978, and a p value of 0.096. Therefore, Hypothesis 6 was not rejected at the $\alpha = 0.05$ value.

Although the hypothesis was not rejected, the low p value (0.096) was close to being significant at the alpha = 0.05 level; therefore, a one-way ANOVA was still performed using generation as the independent variable to determine if either factor in the Utrecht Work Engagement Scale was significantly different amongst the generations. The results of the UWES ANOVA using generation as the independent variable are shown in Table 5.12.

Table 5.12 ANOVA of UWES Factors (Generation is Independent Variable)

	Generation Y (n=58)		Generation X (n=147)		Baby Boomer (n=72)			
UWES Factor	**Mean**	**Std Dev**	**Mean**	**Std Dev**	**Mean**	**Std Dev**	**F**	**P***
Vigor & Dedication	34.72	8.04	34.81	9.98	37.10	9.31	1.60	0.20
Absorption	9.10	3.16	9.84	3.40	10.61	3.31	3.33	**0.04**
Total Work Engagement	65.02	13.73	66.20	15.89	70.57	15.38	2.63	0.07

*Shaded cells indicate significantly different results at α=0.05 level

One UWES factor, absorption, resulted in a significant difference amongst the generations (p=0.037). The Baby Boomer generation reported the highest level of

absorption (10.61), Generation X reported the second most (9.84), and Generation Y reported the lowest level of absorption (9.10). To determine which of the generations differed significantly, Tukey's test was performed on the dataset. The results from Tukey's test on UWES factors are shown in Figure 5.13.

Table 5.13 Tukey's HSD Test on UWES Absorption Factor (Generation is Independent Variable)

Dependent Variable	(I) Generation	(J) Generation	Mean Difference (I-J)	Std. Error	Sig.*
ABSORPTION	Generation Y	Generation X	-0.74	.515	.324
		Baby Boomer	-1.51*	.587	**.029**
	Generation X	Generation Y	0.74	.515	.324
		Baby Boomer	-0.77	.478	.245

*Shaded cells indicate significantly different results at α=0.05 level

The two generations that differed significantly on the absorption UWES factor were the Generation Y and Baby Boomer generations (p=0.029). This can be easily rationalized. The youngest generation has had little time to become absorbed into their work, whereas the oldest generation should be the most absorbed in their work, which leads to the significant difference between these two generations. The mean absorption level for Generation X fell between the means of the other two generation, but was not significantly different from either of the other two generations.

G. Structural Equation Modeling

Structural equation modeling was used to examine and test the hypothesized relationships between the factors of the JSS and UWES surveys using all data collected. SPSS AMOS (Analysis of Moment Structures) software was used to develop the structural equation models (SEM). In addition to determining the regression coefficients of each factor on the latent variable, AMOS was used to determine the most appropriate path analysis (with all survey factors being considered) to best represent the survey data.

First, the JSS survey section was modeled separately. Since the contribution of each individual survey question was not of primary interest, the summed score of each survey factor (consistent with the factor analysis) was used rather than modeling each individual survey item. The summed factors were then modeled as measured values in the SEM, and were related to the latent variable of interest. Latent variables were theoretical constructs not observed directly, but which could still be analyzed using the SEM tool. The measured items were linked to the latent variable, making an indirect measurement of the unobserved latent variable possible. The two primary latent variables of interest in this research were satisfaction and work engagement.

In AMOS, the measured variables were represented by rectangles, and the latent variables were represented by an oval. For each of the measured variables, an error term was also included, which is represented by the small circle. To test the fit of the proposed SEM, AMOS calculated the regression coefficients for each of the arrows between the latent variable and measured variables. More importantly, AMOS tested the model adequacy by calculating the level of fit between the proposed SEM and the actual data.

1. SEM Goodness-of-Fit Statistics

In SEM, the most widely used test for model adequacy is the chi-squared test (SPSS 2006). This test assesses the discrepancy between sample correlations and implied population correlations by the model (i.e., between the sample data and the implied SEM). The difference between the correlations is used to calculate a chi-square value, and a corresponding probability value. If the model is correct, a small difference between the sample correlations and implied population correlations will be expected, and will also result in a small value for the chi-square test. Given the value of the chi-square test (CMIN) and the degrees of freedom (DF), the probability (P) can be computed based on the ratio of CMIN/DF. Unlike standard hypothesis testing, a probability value above a certain criterion is desired, rather than below a criterion. Low probability values would mean that the model is unlikely and should be rejected (SPSS 2006). For these analyses, an alpha value of 0.05 will be used to assess the model adequacy; therefore, probability (P) values greater than 0.05 for the chi-squared test are desired. The chi-squared statistic (CMIN) and corresponding probability value (P) will be the primary statistics used to assess model fit in this research.

When building and assessing the fit of SEM, AMOS provides many outputs that can be used. Again, the most widely used test is the chi-squared goodness of fit test. AMOS calculates a ratio of CMIN/DF, where CMIN is the minimum discrepancy statistic (i.e., the chi-square statistic), and DF is the number of degrees of freedom in the model. Byrne (2001) suggests that the CMIN/DF statistic should be no greater than 2.0 for an adequate fitting model.

In addition to the chi-squared test, AMOS also calculates other statistics that can be used to assess the model fit. The comparative fit index (CFI), is calculated by comparing the proposed SEM with the independence model. The independence model, which is the most restrictive model, assumes that all variables in the model are independent and all correlations among variables are zero. The CFI value can range between zero and 1.0. While values of CFI > 0.90 were originally considered representative of a well-fitting model (Bentler 1992), Hu and Bentler (1999) have revised the threshold to CFI > 0.95 and furthermore suggested that CFI be the index of choice when assessing model fit (Byrne 2001).

Another fit statistic used to assess model adequacy is root mean square error of approximation (RMSEA). The RMSEA takes into account the error of approximation and is expressed per degree of freedom (DF), making it sensitive to the number of parameters in the model. RMSEA values less that 0.05 indicate good fit, values from 0.08 to 0.10 indicate mediocre fit, and those greater than 0.10 indicate poor fit (Byrne 2001). AMOS also reports a 90% confidence interval around the RMSEA value, thereby providing the researcher more information when assessing the fit of the model (Byrne 2001). Each of these statistics will be calculated and used to assess the fit of the models in this research.

2. Structural Equation Model of Job Satisfaction Survey

The first SEM modeled only the data from the JSS portion of the survey instrument. The relationships amongst the JSS factors from the factor analysis and their relative contribution to the overall latent variable (satisfaction) were of interest. Since the

results of the factor analysis earlier in this chapter indicated that the pay and promotion constructs both loaded on the same factor, these items were combined and treated as one factor in the SEM. This resulted in a SEM with six measured values, all of which indirectly measured a component of the latent variable, satisfaction. The initial hypothesized JSS SEM was established as shown in Figure 5.2. In this model, the arrows were drawn from the latent variable to each of the measured variables to indicate that satisfaction was determined by each of the eight measured variables. The circles indicated residual (error) terms.

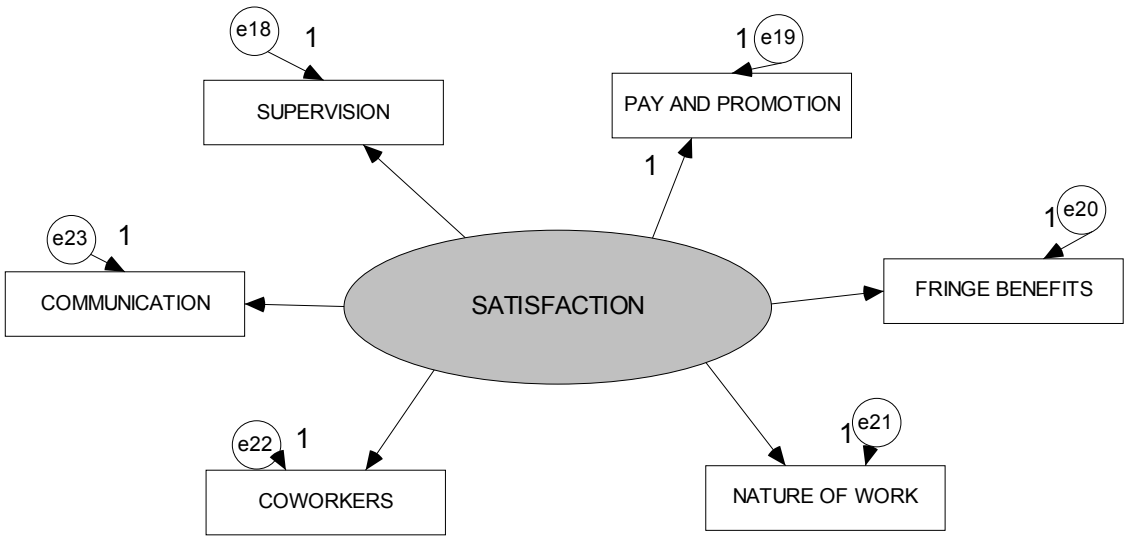

Figure 5.2 Initial SEM of Job Satisfaction Survey section

When testing the adequacy of this initial JSS model, AMOS calculated a chi-squared (CMIN) value of 47.8, with a probability value <0.001. This indicated that the model did not fit the sample data and was rejected. To assist in the model building effort, AMOS computed modification indices, which proposed additional relationships in the

model to lower the chi-square value. During this model building exercise, the relationship with the largest modification index was added to the model, and the model was reassessed. If necessary, another relationship with the highest modification index was then added. This process was continued until a model was developed which produced an acceptable chi-square probability value (P≥0.05).

During the model building process of the JSS SEM, relationships were added between promotion and pay/rewards, between fringe benefits and pay/promotion, and between co-workers and nature of work, in that order. Each added relationship lowered the chi-square value and increased the probability value of the model. The resulting model, shown in Figure 5.3, had a chi-squared value (CMIN) of 8.435 and probability value (P) of 0.296, which indicated that the model could not be rejected at the alpha=0.05 level.

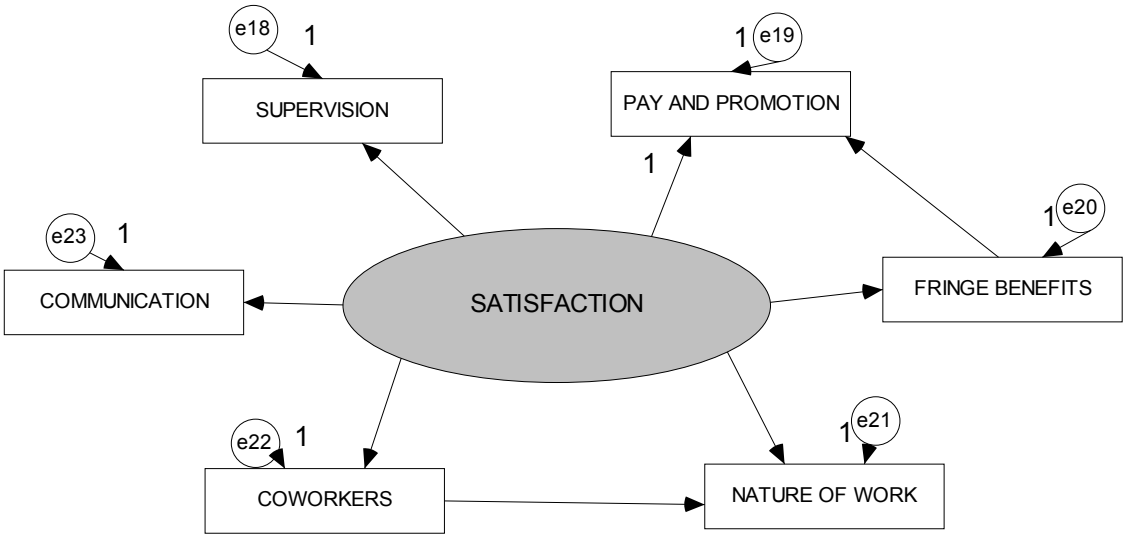

Figure 5.3 Accepted model of the JSS items

In addition to the chi-square goodness of fit test, other model fit statistics were computed to better assess the adequacy of the model. Values for CMIN/DF, CFI, and RMSEA were all assessed and were within the desirable ranges for an adequate fitting model. A summary of the model fit statistics for the JSS SEM is listed in Table 5.14.

Table 5.14 Model Fit Statistics for JSS SEM

Model Fit Statistic	Default Model	Desired Values
CMIN	8.435	-
DF	7	-
P (Chi-square)	0.296	> 0.05
CMIN / DF	1.205	< 2.0
CFI	0.997	> 0.95
RMSEA / 90% C.I.	0.027 / 0.00-0.082	< 0.05

Now that an acceptable model had been built, the regression coefficients could be analyzed. During these analyses, the standardized coefficients (correlations) were analyzed. AMOS allowed the regression estimates to be viewed graphically on the model diagram, and also numerically in an output table. For ease of viewing, the results for this research were shown graphically on the SEM diagram(s), as illustrated in Figure 5.4.

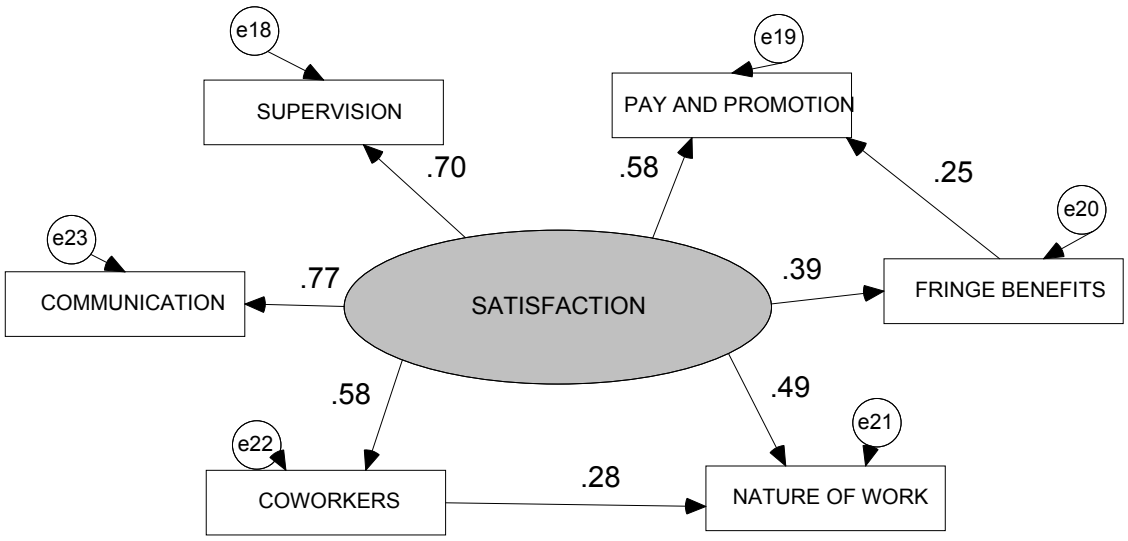

Figure 5.4 Standardized output results for JSS SEM

As shown in the above figure, the numerical value on each arrow between satisfaction and the measured factors (shown in boxes) represents the regression coefficient. For example, for every one unit of change in communication, satisfaction will change by 0.77. Likewise, the effect of each of the other factors is displayed graphically with the corresponding regression coefficients. These values serve as insight to the relative contribution of each underlying construct of job satisfaction. It is of notable interest that communication resulted in the largest regressor on satisfaction, whereas fringe benefits resulted in the smallest regressor on satisfaction. By examining the SEM diagram in Figure 5.4, one can view how the various factors affect overall satisfaction for the civilian DoD workforce.

3. Structural Equation Model of Work Engagement Survey Items

The data from the UWES section were modeled in a SEM similarly to that in the previous section. Again, the contributions of each individual survey item were not of interest, only the summed total for each factor. Therefore, a very simple SEM, shown in Figure 5.5 was developed to examine the relationships of the work engagement survey. This initial SEM of the UWES section did not converge upon a unique solution; therefore, the model was rejected.

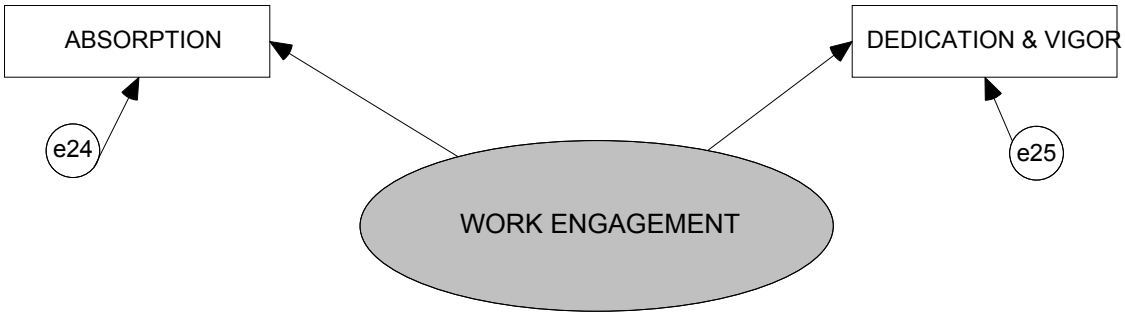

Figure 5.5 Initial model of the UWES Section

The modification index in the AMOS output was used to determine other possible relationships that could be added to improve the model adequacy. The modification index suggested a relationship between the dedication and absorption items. This relationship was added by drawing an arrow between the boxes, and the new model was reassessed. The resulting model, shown in Figure 5.6, resulted in a chi-square (CMIN) value of 2.596 and a probability value (P) of 0.107, meaning that the model could be rejected, and explained the sample data sufficiently at the alpha = 0.05 level.

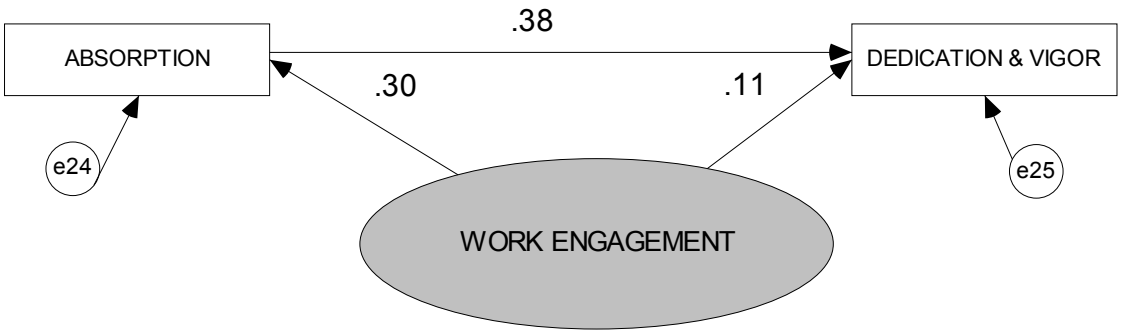

Figure 5.6 Standardized output of final work engagement SEM

The resulting SEM indicated that the absorption factor had a higher effect on the level of work engagement than the dedication and vigor factor, and that there was also a linear relationship between the absorption and dedication & vigor factors. This indicates that all each of the constructs of are interconnected and contribute as a whole to the overall level of work engagement.

4. Structural Equation Model of Satisfaction and Work Engagement Items

To examine the relationships between the satisfaction and work engagement factors, the two models from the previous two sections were combined into one aggregate SEM. The initial combined model consisted of only one interaction between the two sub-models, an arrow from the work engagement latent factor to the satisfaction latent factor. This initial hypothesized aggregate SEM is shown in Figure 5.7.

This initial model had a chi-square (CMIN) value of 131.5 and a probability level (P) of <0.001. Therefore, the theoretical model did not represent the sample data and was

rejected. The AMOS output was examined to determine if any regression arrows were non-significant.

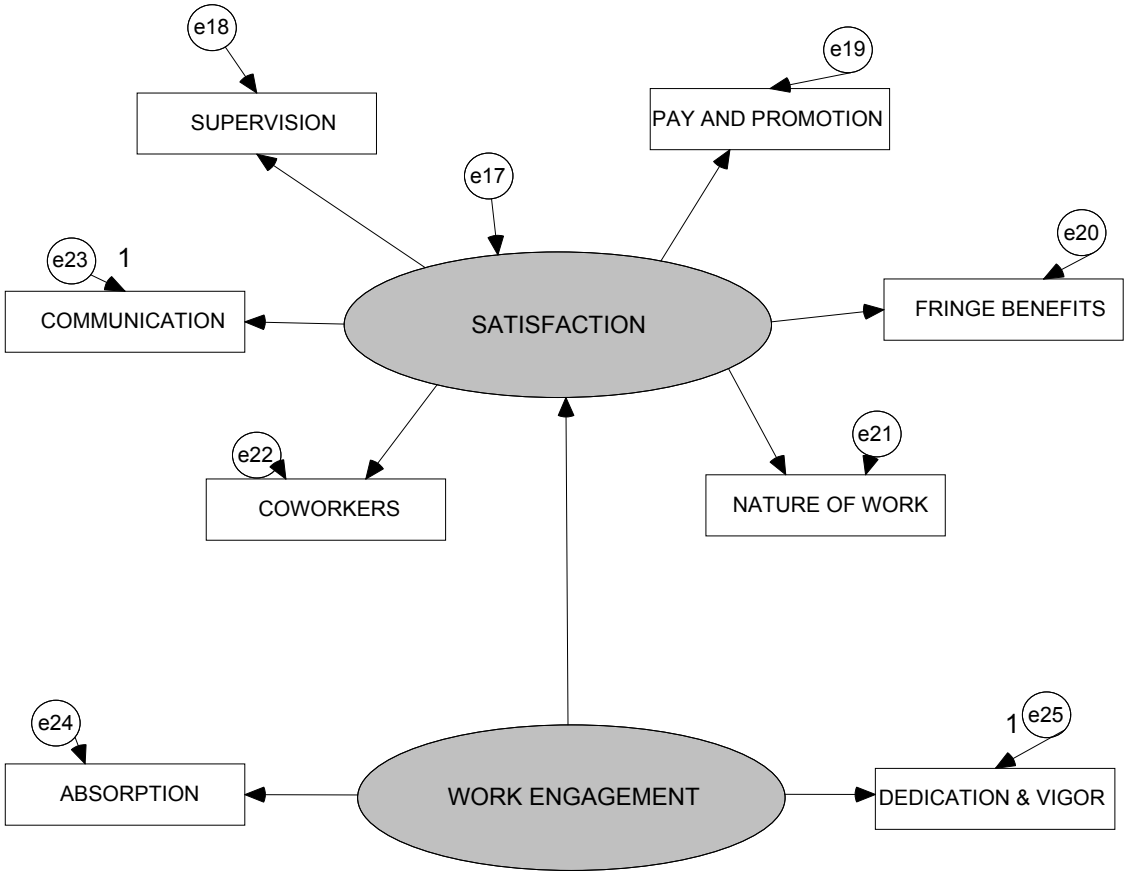

Figure 5.7 Initial Model of JSS and UWES Factors

After removing the non-significant regressions from the initial model, the modification indices were examined in the AMOS output for other suggested relationships that would improve the model adequacy. A relationship between work engagement and nature of work was added first, followed by relationships between fringe benefits and pay/promotion, and nature of work and coworkers. At that time, AMOS listed no more suggested relationships in the modification index to improve the model fit.

The resulting model, shown in Figure 5.8 with the standardized regression coefficients, had a chi-square (CMIN) value of 22.082 and a probability level (P) of 0.141, meaning that the model explains the data sufficiently and could be rejected at the alpha = 0.05 level.

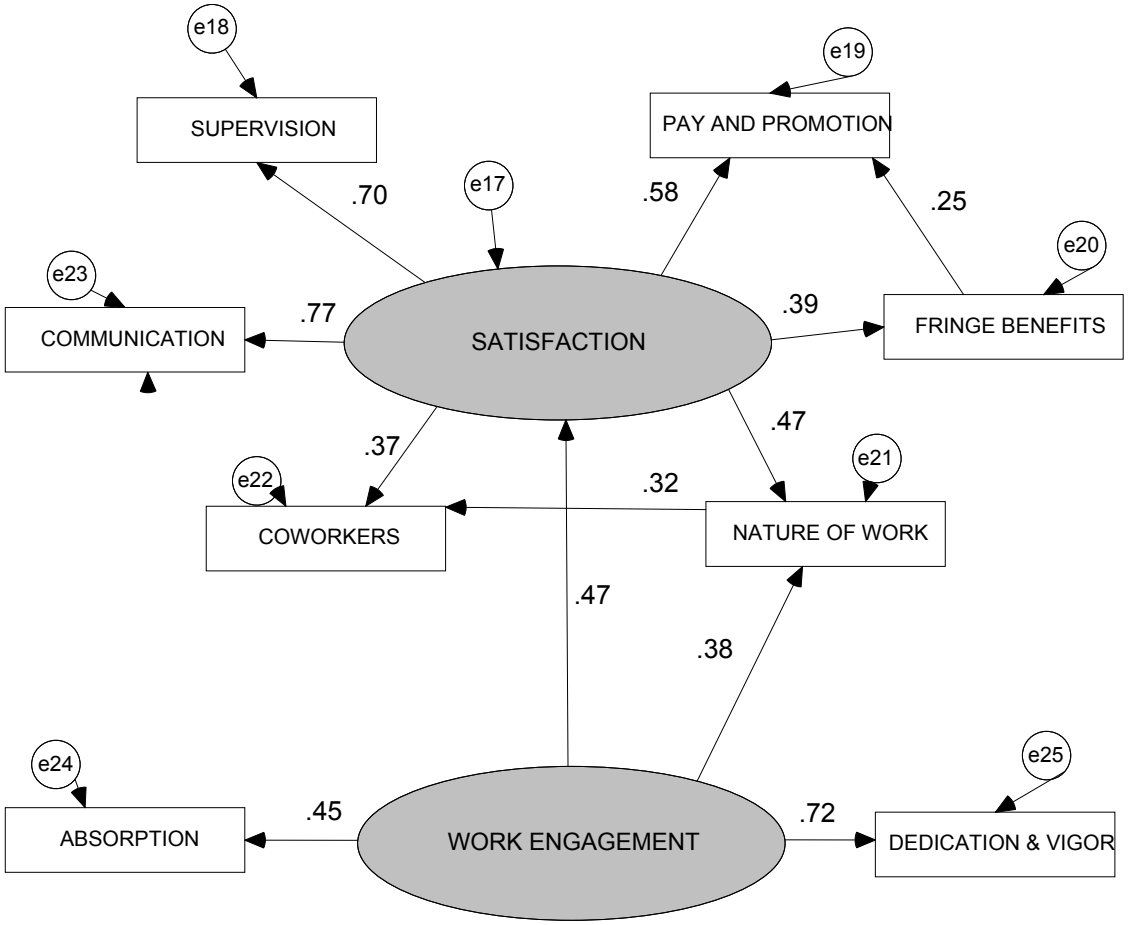

Figure 5.8 Standardized output of Final Structural Equation Model

In addition to the chi-squared statistic, additional goodness of fit statistics were analyzed to assess the model adequacy. Values for CMIN, CMIN/DF, P, CFI, and RMSEA were recorded for the final model, with all of these statistics suggesting an

excellent model fit. A summary of the goodness of fit statistics and for the final SEM and desired values are listed in Table 5.15.

Table 5.15 Model Fit Statistics for Final SEM

Model Fit Statistic	Default Model	Desired Values
CMIN	22.082	-
DF	15	-
P (Chi-square)	0.141	> 0.05
CMIN / DF	1.38	< 2.0
CFI	0.993	> 0.95
RMSEA / 90% C.I.	0.0037 / 0.000-0.072	< 0.05

From the resulting model it was shown that the nature of work factor from the JSS had significant relationships with overall work engagement level. The SEM also revealed a significant relationship (0.47 regression coefficient) between work engagement and satisfaction, meaning that for every one unit of change in work engagement, satisfaction changed by 0.47. This important finding provided evidence to suggest that better engaging the workforce could result in an increase overall satisfaction.

Recall that Hypothesis #7 was "the level of job satisfaction determines the extent of work engagement for Civilian DoD employees." The results for the structural equation model were used to test this hypothesis. The analysis revealed that rather than job satisfaction being a determinant of work engagement, work engagement is actually a determinant of job satisfaction. Therefore, Hypothesis #7 is rejected.

One of the advantages of SEM is that the resulting model can be helpful in understanding the relative contribution of each measured job factor to the two main latent

factors, job satisfaction and work engagement. This is especially beneficial for managers of the DoD scientist and engineer workforce hoping to increase job satisfaction and work engagement, as they can concentrate on the job factors that contribute the most. Tables 5.16 and 5.17 provide a summary of the standardized regression coefficient results from the final SEM. These values represent a relative contribution to the latent factors (job satisfaction or work engagement).

Table 5.16 Relative Contribution of Job Satisfaction Factors

Regressors of Job Satisfaction	Standardized Regression Coefficient
Communication	0.772
Supervision	0.699
Salary / Promotion Potential	0.581
Work Engagement	0.466
Nature of Work	0.472
Fringe Benefits	0.386
Co-Workers	0.373

As for the factors affecting the overall level of job satisfaction, communication and supervision were the highest contributors. This insight is helpful for managers to understand the importance of communication and feedback with their employees. Not only will the work environment be more synergistic with better communication, but the overall level of employee job satisfaction is increased as well.

Table 5.17 Relative Contribution of Work Engagement Factors

Regressors of Work Engagement	Standardized Regression Coefficient
Dedication and Vigor	0.720
Absorption	0.452
Nature of Work	0.385

As for the factors affecting work engagement, dedication and vigor was by far the largest contributor. These factors cannot always be directly influenced by managers; however, by communicating with the workforce and determining what particular types of work each employee is truly dedicated to, the manager can best staff their workforce to the most accommodating positions to ensure the highest levels of work engagement. The connection between nature of work and work engagement also supports this initiative. Even though the nature of work factor was measured in the JSS section of the survey instrument, it was determined to be a significant contributor to the overall level of work engagement, as measured in the UWES sections of the survey. The SEM analyses of this research were beneficial in discovering these relationships that are not measured directly.

H. Summary of Results

Through the data collection and analysis procedure, each of the seven hypotheses was statistically tested. As summarized in Table 5.18, five of the seven hypotheses were rejected, while two were not rejected. Additionally, the significant findings from all individual statistical tests were summarized and listed in Table 5.19. Each finding is significant in contributing to the body of knowledge in age and generational related differences in job satisfaction and work engagement. These research findings are also insightful for the Civilian DoD manager as they face the upcoming retirement boom of the workforce. The researcher's interpretation of these results will be presented in the following chapter.

Table 5.18 Summary of Hypotheses Tested and Results

	Hypothesis	Rejected / Not Rejected	Statistical Test	p value	Comments
Age-Related Differences	1. There are no differences in the importance of work factors for younger (<45 years old) and older (≥45 years old) Civilian DoD employees.	Rejected	MANOVA	<0.01	Significant factors* include: promotion opportunities, working relationships with co-workers, communication, and work/life balance.
	2. There are no differences in the job satisfaction levels of younger (<45 years old) and older (≥45 years old) Civilian DoD employees.	Rejected	MANOVA	0.012	Significant factors include: co-workers
	3. There are no differences in the work engagement levels of younger (<45 years old) and older (≥45 years old) Civilian DoD employees.	Rejected	MANOVA	<0.01	Significant factors include: dedication & vigor, absorption, and overall level of work engagement.
Generation-Related Differences	4. There are no differences in the importance of work factors for the Baby Boomer, Generation X, or Generation Y generational cohorts of Civilian DoD employees.	Rejected	MANOVA	<0.01	Significant factors include: promotion opportunities and maintaining a work/life balance.
	5. There are no differences in the job satisfaction levels of the Baby Boomer, Generation X, or Generation Y generational cohorts of Civilian DoD employees.	Not rejected	MANOVA	0.102	Significant factors include: nature of work
	6. There are no differences in the work engagement levels of the Baby Boomer, Generation X, or Generation Y generational cohorts of Civilian DoD employees.	Not rejected	MANOVA	0.096	Significant factors include: absorption
	7. The level of job satisfaction determines the extent of work engagement for Civilian DoD employees.	Rejected	SEM Goodness of Fit	---	The extent of work engagement drives level of satisfaction.

* Significance reported at the alpha = 5% level

Table 5.19 Summary of Statistically Significant Findings

Independent Variable	Dependent Variable	Significance (p value)	Comments
Employee Age (Age <45, Age ≥ 45)	Level of dedication & Vigor (work engagement)	<0.01	Older employees reported higher levels of dedication and vigor
	Level of absorption (work engagement)	<0.01	Older employees reported higher levels of absorption
	Level of overall / total work engagement	<0.01	Older employees reported higher levels of total work engagement
	Importance of Promotion opportunities	0.01	Older employees reported higher satisfaction levels with co-workers
	Satisfaction level with co-workers	0.01	Younger employees placed more importance on promotion opportunities
	Importance of working relationships with co-workers	0.03	Older employees placed more importance on working relationships with co-workers
	Importance of maintaining a work/life balance	0.03	Younger employees placed more importance on maintainng a work/life balance
	Importance of communication within the organization	0.04	Older employees placed more importance on communication within the organization
Generation (Gen Y, Gen X, & Baby Boomer)	Importance of Promotion opportunities	<0.01	Generation Y placed the highest importance on promotion opportunites, Baby Boomers reported the least
	Importance of maintaining a work/life balance	0.02	Generation Y placed the highest importance on work/life balance, Baby Boomers reported the least
	Satisfaction level with nature of work	0.03	Baby Boomers reported the most satisfaction with the nature of their work, Generation X reported the least
	Level of absorption (work engagement)	0.04	Baby Boomers reported the highest level of absorption, Generation Y reported the lowest

CHAPTER VI

SUMMARY AND RECOMMENDATIONS

This research enabled investigation of many of the unknowns regarding age and generation-related differences in the Civilian DoD workforce. With the upcoming retirement boom in the federal workforce, many key roles and responsibilities will soon be reassigned to younger employees that will assume these positions left behind by the retiring workforce. Understanding these age and generation related-differences in DoD employees is important. This analysis provided important insights as to how managers can better manage their younger employees to ensure smooth transitions and the highest level of job satisfaction and work engagement possible in the DoD workforce.

A. Conclusions

Many conclusions were drawn from the analysis of the collected data. Some conclusions simply supported common sense and were of no surprise. However, other conclusions were made that refute many of the long-standing generalizations in popular literature about generational differences. Each of the findings was of importance in contributing to the body of knowledge on the subject of satisfaction and work engagement in the DoD workforce.

1. General Conclusions

The following general conclusions were drawn from this research:

- The differences determined by this research were primarily driven by age (maturity) and career stage, not generational cohort. Employees' desires and needs change throughout the progression of their lives and careers, but are not predetermined by their generational group. This progression of needs can be related to Maslow's hierarchy of human needs, as discussed in Chapter 2. The younger employees are beginning their careers on the lower tiers of Maslow's hierarchy, meaning that pay/salary and promotion opportunities are of more importance, as these needs have yet to be met. As employees grow older and progress through their career, the monetary needs are met and their needs change. The older employees are more driven by higher order needs in the hierarchy, such as esteem and self-actualization. This natural progression has little to do with generation, but does relate to age and career stage.

- Of the three hypotheses tested to investigate generation-related differences, only one, the importance of work factors, differed significantly amongst the three generations. The primary difference in this analysis was the relative importance of promotion opportunities. However, this difference can simply be attributed to age and/or career stage rather than generational group. No statistically significant differences existed in the overall job satisfaction and work engagement of the three generations.

- Work engagement is often overlooked as a determinant of job satisfaction; however, this research proved that the intrinsic factors such as work engagement and the nature of the work itself are just as important, if not more so. The structural equation model in Chapter 5 revealed a strong tie between work engagement and job satisfaction.

As Herzberg (1968, 53) noted, "the only way to motivate the employee is to give him challenging work in which he can assume responsibility." The findings of this research support his statement. By being provided with challenging work in which the employee can assume responsibility, he becomes more engaged in his work, which naturally increases his motivation and overall satisfaction.

- Maintaining a work/life balance consistently ranked the most important of all job factors for Civilian DoD employees. This was true across both age groups and all three generations. This particular work factor is often neglected in similar research studies, but the data collected in this research suggests that it is most important to employees and should not be overlooked.

2. Generational Stereotypes

Popular literature has stereotyped each generation with a set of characteristics. However, little empirical evidence exists to support many of these stereotypes. Even when empirical data has been used to make determinations about differences amongst the generations, other studies can produce varying results with use of a different sample population or survey tool. Comparison of the findings from past research and the current research are summarized below.

- Glass (2007) stated that younger generations need, and expect constant feedback. This statement was not supported by the data collected during the current research, as the difference between generations with respect to feedback was not statistically significant (p=0.20).

- Generation X and Generation Y place more importance on work/life balance (Kupperschmidt 2000, Glass 2007) than the Baby Boomer generation. The data collected from the current research supports this statement from earlier research, with a significant difference in importance of maintaining a work/life balance (p=0.02). Generation Y placed the most importance (4.63) on maintaining this balance, whereas Generation X was second (4.51), and Baby Boomers were the lowest (4.25). Even though there was a significant difference in the level of importance of this job factor, it is notable that this particular job factor was the highest ranked job factor of importance for all three generations in this research, and should not be considered unimportant for Baby Boomers.

- Past research suggests that Generation X prefers a work environment conducive to relationship building, and that the younger generations prefer a sense of belonging and are significantly more team oriented than Baby Boomers (Yang and Guy 2006, Karp et al. 1999, Loomis 2000). Data collected from the current research did not reveal a significant difference in the importance of working relationships with coworkers. Additionally, contrary to past research, the Baby Boomer generation placed more importance (4.09) on this factor than the Generation X and Y generations (4.04 and 3.86, respectively).

B. Implications

1. To the Civilian DoD Employee

Many younger employees are mostly concerned with getting a larger compensation package (i.e., higher salary). Although, to be truly satisfied with a career

in the federal government, employees should focus on determining a role in which they can become fully immersed. This research has shown that the nature of work and level of work engagement are both large contributors to the overall level of job satisfaction. While government positions are bound by strict paybands, one cannot influence their salary dramatically. However, given the nature of most DoD organizations, many different types of job positions exist. Also, government employees have more freedom than those in private industry to move laterally within the organization. Younger DoD employees should exploit these opportunities to experience different job roles and discover the type of work that they most enjoy. By concentrating on finding a position that provides challenging and interesting work rather than a higher paycheck, one will have a much more satisfying and fulfilling career within the government.

2. To the Civilian DoD Manager

First of all, Civilian DoD managers could benefit from reviewing the results in Chapter 5, especially those ranking the relative importance of job factors. An area that is often overlooked at the workplace is encouraging a work/life balance, which was consistently ranked as the most important factor in this research. This intrinsic reward is more meaningful to all DoD employees than traditional rewards, and should be emphasized whenever possible when dealing with the workforce.

Managers should also concentrate on finding ways to better engage employees, especially younger employees, which is determined by nature of the work. As Lander (2006) suggested in her research, employers should encourage lateral moves within the organization so that younger employees are less likely to become bored and leave. Given

the nature of government organizations, lateral moves are easily executed, and could greatly increase the satisfaction level of employees if they are able to transfer to a position in which they become more engaged.

Given the fact that promotion opportunities are always important to younger employees, managers should better communicate these opportunities with the younger workers in the workforce. Many government organizations do not have an on-site human resources department, so communicating these opportunities to the workforce is often the responsibility of the first line supervisor. Keeping the workforce aware of possible career paths will help with retention of the younger generations that are notorious for changing jobs often when they feel their needs are not met.

Lastly, but certainly not least, managers need to communicate, communicate, and communicate. Keeping the workforce informed on all matters not only facilitates more productivity and a common purpose, but has also been shown to increase satisfaction in the workforce. The results from the structural equation model in Chapter 5 revealed that communication is the largest contributor, by far, to the overall job satisfaction in Civilian DoD employees.

C. Limitations of Subject Research

This particular research investigated the Civilian DoD employee population, using a sample from one government research and development facility. The sample demographics were representative of the entire DoD workforce; however, no data was collected from other geographical areas to add diversity to the data sample. It was

assumed that the data collected and findings of the research apply to the entire Civilian DoD workforce.

Being as this research project was conducted over a span of less than one year, the data sample was collected only once through a cross-sectional analysis of the workforce. Generalizations and conclusions were made from the data analysis about age and generational-related differences. However, in order to truly analyze age and generational-related differences in the workforce, the same respondents should be studied over a period of time as they grow older and progress through their career.

D. Areas of Future Research

The majority of findings from this research were straightforward and easily rationalized, with the exception of one. When analyzing the satisfaction level with the nature of work across the generations, the Baby Boomer generation reported the most satisfaction, with Generation Y reporting the next highest, and with Generation X reporting the least satisfaction with the nature of their work. Therefore, the satisfaction level with the nature of work, when plotted across the generations, produced a u-shaped curve. It is not clear what produced this 'dip' in satisfaction with the nature of work for Generation X. Additional research might prove beneficial in better explaining this phenomenon.

Due to the limitations of the cross-sectional analysis used in this research, one area for future research includes a longitudinal study of the same sample population. The only way to truly determine if the differences witnessed in this research were age

related or generation related would be to revisit Generation X and Y as they grow older to determine if they have changed as they grow older.

Being as the current research was conducted with a sample from one government organization in the United States, it would be interesting to investigate these same topics amongst different geographical areas or even in different cultures. Do the age related differences revealed in this research apply to different areas or cultures?

E. Summary

The upcoming retirement boom in the DoD cannot be prevented. The lack of continuum in hiring employees over the past several decades has created a natural gap in the age demographics of the Civilian workforce. However, federal government managers can leverage this research to better understand the desires of the younger generations to maximize work engagement and overall job satisfaction. While generational cohort did not prove to be a factor in these differences, this research has shown how the importance and satisfaction levels differ due to age and career stage. By understanding these age-related differences and adjusting their management style accordingly, managers can best prepare the younger employees to effectively assume the roles and responsibilities left behind by the retiring workforce while increasing the overall level of satisfaction in the workplace.

APPENDICES

APPENDIX A

SURVEY INSTRUMENT

Survey Instrument

Introduction

Dear Civilian Government Employee,

Research is being conducted to investigate the contextual factors of the jobs and well being of government employees. Attached you will find a short survey that will help identify the particular areas of interest to Federal Government employees. Your answers to this survey are voluntary and completely anonymous. Since a full sample is required for representative results, we encourage your participation in the survey. The three part survey takes less than 10 minutes to complete, and the resulting data will be available to those that are interested. Thank you for your valuable contribution.

PART I: Background/Demographic Questions

Please check the appropriate box under each category

1	**Gender:**	Male ☐	Female ☐
2	**Age Group:**	<25 ☐ 25-29 ☐ 30-34 ☐ 35-39 ☐ 40-44 ☐	45-49 ☐ 50-54 ☐ 55-59 ☐ 60-64 ☐ ≥65 ☐
3	**Job Category:**	Engineer / Scientist ☐ Technician ☐ Supervisor / Manager ☐ Clerical / Admin ☐	
4	**Education Level: (Highest Level)**	PhD / Doctorate Degree ☐ Master's Degree ☐ Bachelor's Degree ☐ Associate's Degree ☐ High School Diploma ☐	
5	**Years of Govt Service:**	0-5 ☐ 6-10 ☐ 11-15 ☐ 16-20 ☐	21-25 ☐ 26-30 ☐ 31-35 ☐ 35+ ☐
6	**Ethnicity (optional)**	White ☐ Black ☐ Asian ☐ Hispanic ☐ Other ☐	

	PART 2: PLEASE CIRCLE THE ONE NUMBER FOR EACH QUESTION THAT COMES CLOSEST TO REFLECTING YOUR OPINION ABOUT IT.	Disagree very much	Disagree moderately	Disagree slightly	Agree slightly	Agree moderately	Agree very much
1	I feel I am being paid a fair amount for the work I do	1	2	3	4	5	6
2	There is really too little chance for promotion on my job.	1	2	3	4	5	6
3	My supervisor is quite competent in doing his/her job.	1	2	3	4	5	6
4	I am not satisfied with the benefits I receive.	1	2	3	4	5	6
5	When I do a good job, I receive the recognition for it that I should receive.	1	2	3	4	5	6
6	Many of our rules and procedures make doing a good job difficult.	1	2	3	4	5	6
7	I like the people I work with.	1	2	3	4	5	6
8	I sometimes feel my job is meaningless.	1	2	3	4	5	6
9	Communications seem good within this organization.	1	2	3	4	5	6
10	Raises are too few and far between.	1	2	3	4	5	6
11	Those who do well on the job stand a fair chance of being promoted.	1	2	3	4	5	6
12	My supervisor is unfair to me.	1	2	3	4	5	6
13	The benefits we receive are as good as most other organizations offer.	1	2	3	4	5	6
14	I do not feel that the work I do is appreciated.	1	2	3	4	5	6
15	My efforts to do a good job are seldom blocked by red tape.	1	2	3	4	5	6
16	I find I have to work harder at my job because of the incompetence of people I work with.	1	2	3	4	5	6
17	I like doing the things I do at work.	1	2	3	4	5	6
18	The goals of the organization are not clear to me.	1	2	3	4	5	6

	PART 2 (continued): PLEASE CIRCLE THE ONE NUMBER FOR EACH QUESTION THAT COMES CLOSEST TO REFLECTING YOUR OPINION ABOUT IT.	Disagree very much	Disagree moderately	Disagree slightly	Agree slightly	Agree moderately	Agree very much
19	I feel unappreciated by the organization when I think about what they pay me.	1	2	3	4	5	6
20	People get ahead as fast here as they do in other places.	1	2	3	4	5	6
21	My supervisor shows too little interest in the feelings of subordinates.	1	2	3	4	5	6
22	The benefit package we have is equitable.	1	2	3	4	5	6
23	There are few rewards for those who work here.	1	2	3	4	5	6
24	I have too much to do at work.	1	2	3	4	5	6
25	I enjoy my coworkers.	1	2	3	4	5	6
26	I often feel that I do not know what is going on with the organization.	1	2	3	4	5	6
27	I feel a sense of pride in doing my job.	1	2	3	4	5	6
28	I feel satisfied with my chances for salary increases.	1	2	3	4	5	6
29	There are benefits we do not have which we should have.	1	2	3	4	5	6
30	I like my supervisor.	1	2	3	4	5	6
31	I have too much paperwork.	1	2	3	4	5	6
32	I don't feel my efforts are rewarded the way they should be.	1	2	3	4	5	6
33	I am satisfied with my chances for promotion.	1	2	3	4	5	6
34	There is too much bickering and fighting at work.	1	2	3	4	5	6
35	My job is enjoyable.	1	2	3	4	5	6
36	Work assignments are not fully explained.	1	2	3	4	5	6

	PART 3: The following 17 statements are about how you feel at work. Please read each statement carefully and decide if you ever feel this way about your job. If you have never had the feeling, circle the '0' (zero) in the space after the statement. If you have had this feeling, indicate how often you feel it by circling the number (from 1 to 6) that best describes how frequently you feel that way.	Never	Almost Never *	Rarely	Sometimes	Often	Very Often	Always
1	At my work, I feel bursting with energy.	0	1	2	3	4	5	6
2	I find the work that I do full of meaning and purpose.	0	1	2	3	4	5	6
3	Time flies when I'm working.	0	1	2	3	4	5	6
4	At my job, I feel strong and vigorous.	0	1	2	3	4	5	6
5	I am enthusiastic about my job.	0	1	2	3	4	5	6
6	When I am working, I forget everything else around me.	0	1	2	3	4	5	6
7	My job inspires me.	0	1	2	3	4	5	6
8	When I get up in the morning, I feel like going to work.	0	1	2	3	4	5	6
9	I feel happy when I am working intensely.	0	1	2	3	4	5	6
10	I am proud of the work that I do.	0	1	2	3	4	5	6
11	I am immersed in my work.	0	1	2	3	4	5	6
12	I can continue working for very long periods at a time.	0	1	2	3	4	5	6
13	To me, my job is challenging.	0	1	2	3	4	5	6
14	I get carried away when I'm working.	0	1	2	3	4	5	6
15	At my job, I am resilient, mentally.	0	1	2	3	4	5	6
16	It is difficult to detach myself from my job.	0	1	2	3	4	5	6
17	At my work I always perservere, even when things do not go well.	0	1	2	3	4	5	6

*Almost Never – A few times a year or less
Rarely – Once a month or less
Sometimes – A few times a month
Often – Once a week
Very often – A few times a week
Always – Everyday

Survey Summary:

Finally, please indicate the level of importance for each of the following job factors in your current position.

	Least Important	Less Important	Neutral	More Important	Most Important
Pay / Salary					
Promotion Opportunities					
Supervision and Feedback (Relationship with Immediate Supervisor)					
Benefits					
Recognition & Rewards for good work					
Operating Policies and Procedures					
Working Relationship with Coworkers					
Nature of the Work Itself					
Communication within the Organization					
Trust within the organization					
Maintaining a Work/Life Balance					

APPENDIX B

STATISTICAL CALCULATIONS

Table B.1 ANOVA of JSS Items (Age Group is Independent Variable)

	Age Under 45 (N=143)		Age 45 & Older (N=134)				
JSS Item	**Mean**	**Std Dev**	**Mean**	**Std Dev**	**Delta**	**F**	**p**
I feel I am being paid a fair amount for the work I do.	5.05	1.14	5.01	1.28	0.04	0.05	0.815
*There is really too little chance for promotion on my job.	3.59	1.41	3.01	1.57	0.58	10.79	**0.001**
My supervisor is quite competent in doing his/her job.	5.06	1.12	5.11	1.08	-0.05	0.18	0.673
*I am not satisfied with the benefits I receive.	4.62	1.32	4.34	1.71	0.28	2.22	0.137
When I do a good job, I receive the recognition for it that I should receive.	4.41	1.22	4.22	1.43	0.19	1.30	0.255
*Many of our rules and procedures make doing a good job difficult.	2.76	1.46	2.71	1.50	0.05	0.07	0.795
I like the people I work with.	5.16	0.92	5.44	0.71	-0.28	7.89	**0.005**
*I sometimes feel my job is meaningless.	4.20	1.52	4.38	1.58	-0.18	0.91	0.341
Communications seem good within this organization.	3.57	1.46	3.68	1.53	-0.11	0.35	0.556
*Raises are too few and far between.	4.08	1.17	4.01	1.51	0.07	0.15	0.701
Those who do well on the job stand a fair chance of being promoted.	4.03	1.17	3.96	1.48	0.07	0.25	0.618
*My supervisor is unfair to me.	5.43	1.08	5.33	1.06	0.10	0.67	0.414
The benefits we receive are as good as most other organizations offer.	4.55	1.15	4.65	1.29	-0.10	0.43	0.510
*I do not feel that the work I do is appreciated.	4.38	1.30	4.18	1.57	0.20	1.33	0.250
My efforts to do a good job are seldom blocked by red tape.	3.18	1.37	3.05	1.51	0.13	0.56	0.455
*I find I have to work harder at my job because of the incompetence of people I work with.	4.06	1.45	4.28	1.38	-0.22	1.67	0.197
I like doing the things I do at work.	4.79	1.09	5.04	1.07	-0.25	3.62	0.058
*The goals of the organization are not clear to me.	4.08	1.40	3.88	1.53	0.20	1.34	0.248

* Negatively worded item; Reworded from original survey for Clarity

Table B.1 (continued) ANOVA of JSS Items (Age Group is Independent Variable)

	Age Under 45 (N=143)		Age 45 & Older (N=134)				
JSS Item	**Mean**	**Std Dev**	**Mean**	**Std Dev**	**Delta**	**F**	**p**
*I feel unappreciated by the organization when I think about what they pay me.	4.76	1.22	4.72	1.42	0.04	0.04	0.844
People get ahead as fast here as they do in other places.	3.83	1.15	3.96	1.42	-0.13	0.70	0.403
*My supervisor shows too little interest in the feelings of subordinates.	4.85	1.20	4.75	1.28	0.10	0.45	0.504
The benefit package we have is equitable.	4.55	1.00	4.65	1.16	-0.10	0.64	0.424
*There are few rewards for those who work here.	4.20	1.25	4.43	1.31	-0.23	2.09	0.149
*I have too much to do at work.	3.44	1.17	3.42	1.30	0.02	0.02	0.879
I enjoy my coworkers.	4.98	0.92	5.19	0.93	-0.21	3.73	0.055
*I often feel that I do not know what is going on with the organization.	3.12	1.27	3.25	1.39	-0.13	0.71	0.399
I feel a sense of pride in doing my job.	4.94	1.01	5.20	0.93	-0.26	4.83	**0.029**
I feel satisfied with my chances for salary increases.	4.29	1.21	3.98	1.48	0.31	3.63	0.058
*There are benefits we do not have which we should have.	3.72	1.19	3.90	1.28	-0.18	1.39	0.239
I like my supervisor.	5.29	0.99	5.21	1.03	0.08	0.41	0.523
*I have too much paperwork.	3.15	1.24	2.97	1.34	0.18	1.30	0.255
*I don't feel my efforts are rewarded the way they should be.	4.10	1.15	3.87	1.47	0.23	2.15	0.143
I am satisfied with my chances for promotion.	3.99	1.26	3.66	1.51	0.33	3.87	**0.050**
*There is too much bickering and fighting at work.	4.10	1.42	4.25	1.37	-0.15	0.78	0.376
My job is enjoyable.	4.67	1.12	4.88	1.17	-0.21	2.30	0.130
*Work assignments are not fully explained.	3.85	1.35	4.20	1.26	-0.35	4.92	**0.027**

* Negatively worded item; Reverse scored

Table B.2 ANOVA of UWES Items (Age Group is Independent Variable)

	Age Under 45 (N=143)		Age 45 & Older (N=134)				
UWES Item	**Mean**	**Std Dev**	**Mean**	**Std Dev**	**Delta**	**F**	**p**
At my work, I feel bursting with energy.	3.25	1.361	3.58	1.351	-0.33	4.106	**.044**
I find the work that I do full of meaning and purpose.	3.82	1.167	4.16	1.240	-0.35	5.727	**.017**
Time flies when I'm working.	4.03	1.253	4.57	1.072	-0.53	14.341	**.000**
At my job, I feel strong and vigorous.	3.41	1.217	3.77	1.250	-0.36	5.995	**.015**
I am enthusiastic about my job.	3.93	1.320	4.31	1.283	-0.38	5.998	**.015**
When I am working, I forget everything else around me.	3.15	1.311	3.73	1.339	-0.58	13.477	**.000**
My job inspires me.	3.50	1.299	3.78	1.380	-0.27	2.868	.092
When I get up in the morning, I feel like going to work.	3.50	1.409	4.11	1.439	-0.62	12.935	**.000**
I feel happy when I am working intensely.	4.57	1.004	4.64	1.204	-0.08	.322	.571
I am proud of the work that I do.	4.48	1.198	4.92	.926	-0.44	11.347	**.001**
I am immersed in my work.	3.94	1.118	4.43	1.146	-0.48	12.509	**.000**
I can continue working for very long periods at a time.	4.08	1.225	4.40	1.189	-0.31	4.606	**.033**
To me, my job is challenging.	3.97	1.267	4.26	1.424	-0.29	3.196	.075
I get carried away when I'm working.	3.38	1.272	3.62	1.375	-0.24	2.311	.130
At my job, I am resilient, mentally.	3.88	1.104	4.25	1.086	-0.37	7.690	**.006**
It is difficult to detach myself from my job.	2.84	1.442	3.10	1.506	-0.26	2.119	.147
At my work I always perservere, even when things do not go well.	4.38	1.033	4.65	.968	-0.27	5.083	**.025**

Table B.3 ANOVA of JSS Items (Generation is Independent Variable)

	Generation Y (n=58)		Generation X (n=147)		Baby Boomer (n=72)			
JSS Item	**Mean**	**Std Dev**	**Mean**	**Std Dev**	**Mean**	**Std Dev**	**F**	**p**
I feel I am being paid a fair amount for the work I do.	4.98	1.12	5.06	1.18	5.01	1.34	0.10	0.91
*There is really too little chance for promotion on my job.	3.97	1.26	3.19	1.47	3.03	1.65	7.50	**0.00**
My supervisor is quite competent in doing his/her job.	5.10	0.97	5.10	1.11	5.04	1.20	0.07	0.93
*I am not satisfied with the benefits I receive.	4.83	1.13	4.36	1.53	4.46	1.74	1.99	0.14
When I do a good job, I receive the recognition for it that I should receive.	4.40	1.26	4.29	1.32	4.32	1.41	0.14	0.87
*Many of our rules and procedures make doing a good job difficult.	2.84	1.51	2.58	1.47	2.96	1.46	1.82	0.16
I like the people I work with.	5.24	0.80	5.23	0.94	5.47	0.60	2.17	0.12
*I sometimes feel my job is meaningless.	4.40	1.24	4.12	1.64	4.56	1.56	2.14	0.12
Communications seem good within this organization.	3.67	1.42	3.56	1.43	3.71	1.67	0.26	0.77
*Raises are too few and far between.	3.95	1.08	4.11	1.34	4.00	1.53	0.36	0.70
Those who do well on the job stand a fair chance of being promoted.	4.02	1.12	3.99	1.28	3.99	1.57	0.01	0.99
*My supervisor is unfair to me.	5.62	0.72	5.37	1.11	5.21	1.19	2.42	0.09
The benefits we receive are as good as most other organizations offer.	4.74	0.98	4.46	1.20	4.76	1.40	1.99	0.14
*I do not feel that the work I do is appreciated.	4.45	1.23	4.23	1.40	4.25	1.65	0.50	0.61
My efforts to do a good job are seldom blocked by red tape.	3.38	1.35	2.96	1.45	3.24	1.46	2.11	0.12
*I find I have to work harder at my job because of the incompetence of people I work with.	4.12	1.45	4.00	1.42	4.53	1.34	3.43	**0.03**
I like doing the things I do at work.	4.91	0.90	4.79	1.14	5.15	1.08	2.75	0.07
*The goals of the organization are not clear to me.	4.21	1.24	3.94	1.50	3.90	1.54	0.85	0.43

* Negatively worded item; Reverse scored

Table B.3 (continued) ANOVA of JSS Items (Generation is Independent Variable)

	Generation Y (n=58)		Generation X (n=147)		Baby Boomer (n=72)			
JSS Item	**Mean**	**Std Dev**	**Mean**	**Std Dev**	**Mean**	**Std Dev**	**F**	**p**
*I feel unappreciated by the organization when I think about what they pay me.	4.57	1.27	4.82	1.24	4.72	1.51	0.74	0.48
People get ahead as fast here as they do in other places.	3.71	1.14	3.86	1.26	4.08	1.44	1.43	0.24
*My supervisor shows too little interest in the feelings of subordinates.	4.83	1.14	4.74	1.29	4.92	1.20	0.50	0.61
The benefit package we have is equitable.	4.47	0.84	4.54	1.14	4.81	1.10	1.97	0.14
*There are few rewards for those who work here.	3.97	1.26	4.33	1.26	4.54	1.31	3.35	**0.04**
*I have too much to do at work.	3.64	1.04	3.24	1.26	3.64	1.27	3.58	**0.03**
I enjoy my coworkers.	4.98	0.78	5.03	1.01	5.28	0.84	2.20	0.11
*I often feel that I do not know what is going on with the organization.	3.10	1.13	3.17	1.33	3.28	1.47	0.29	0.75
I feel a sense of pride in doing my job.	4.95	1.03	4.98	1.00	5.35	0.84	4.03	**0.02**
I feel satisfied with my chances for salary increases.	4.29	0.99	4.12	1.35	4.06	1.61	0.53	0.59
*There are benefits we do not have which we should have.	3.84	1.18	3.64	1.24	4.11	1.23	3.63	**0.03**
I like my supervisor.	5.34	0.69	5.19	1.15	5.29	0.91	0.57	0.57
*I have too much paperwork.	3.29	1.27	2.92	1.26	3.17	1.34	2.10	0.12
*I don't feel my efforts are rewarded the way they should be.	4.03	0.97	3.99	1.32	3.96	1.55	0.05	0.95
I am satisfied with my chances for promotion.	4.00	1.11	3.82	1.39	3.72	1.61	0.64	0.53
*There is too much bickering and fighting at work.	4.17	1.37	4.16	1.40	4.19	1.41	0.02	0.98
My job is enjoyable.	4.76	0.86	4.67	1.23	5.00	1.16	2.05	0.13
*Work assignments are not fully explained.	3.83	1.26	4.01	1.32	4.21	1.35	1.37	0.26

* Negatively worded item; Reverse scored

Table B.4 ANOVA of UWES Items (Generation is Independent Variable)

	Generation Y (n=58)		Generation X (n=147)		Baby Boomer (n=72)			
UWES Item	**Mean**	**Std Dev**	**Mean**	**Std Dev**	**Mean**	**Std Dev**	**F**	**p**
At my work, I feel bursting with energy.	3.45	1.27	3.37	1.40	3.47	1.38	0.17	0.84
I find the work that I do full of meaning and purpose.	3.93	1.09	3.91	1.24	4.18	1.25	1.27	0.28
Time flies when I'm working.	4.00	1.17	4.24	1.27	4.63	0.98	4.75	**0.01**
At my job, I feel strong and vigorous.	3.62	1.06	3.49	1.31	3.74	1.24	0.98	0.38
I am enthusiastic about my job.	4.09	1.22	4.03	1.35	4.32	1.30	1.22	0.30
When I am working, I forget everything else around me.	3.00	1.27	3.44	1.37	3.76	1.31	5.27	**0.01**
My job inspires me.	3.67	1.16	3.57	1.37	3.74	1.42	0.39	0.68
When I get up in the morning, I feel like going to work.	3.43	1.31	3.75	1.51	4.18	1.38	4.54	**0.01**
I feel happy when I am working intensely.	4.67	0.85	4.58	1.11	4.60	1.27	0.15	0.86
I am proud of the work that I do.	4.60	1.17	4.63	1.14	4.89	0.93	1.58	0.21
I am immersed in my work.	4.03	1.06	4.08	1.17	4.49	1.15	3.59	**0.03**
I can continue working for very long periods at a time.	4.12	1.26	4.14	1.21	4.51	1.17	2.60	0.08
To me, my job is challenging.	3.97	1.21	4.09	1.34	4.28	1.47	0.91	0.41
I get carried away when I'm working.	3.41	1.34	3.42	1.31	3.71	1.35	1.27	0.28
At my job, I am resilient, mentally.	3.97	1.06	3.97	1.16	4.31	1.00	2.46	0.09
It is difficult to detach myself from my job.	2.69	1.35	2.99	1.48	3.14	1.55	1.53	0.22
At my work I always perservere, even when things do not go well.	4.36	1.05	4.50	1.02	4.64	0.94	1.21	0.30

Table B.5 Ranking of Job Factor Importance by Age Group

a. (Age < 45)	Mean
1. Maintaining a Work/Life Balance	4.57
2. Nature of the Work Itself	4.17
3. Pay / Salary	4.09
4. Benefits	3.92
5. Trust within the Organization	3.92
6. Supervision and Feedback (Relationship with Immediate Supervisor)	3.92
7. Working relationships with Coworkers	3.91
8. Promotion Opportunities	3.92
9. Recognition & Rewards for good work	3.72
10. Communication within the Organization	3.44
11. Operating Policies and procedures	3.01

b. (Age ≥ 45)	Mean
1. Maintaining a Work/Life Balance	4.36
2. Nature of the Work Itself	4.26
3. Working relationships with Coworkers	4.12
4. Trust within the Organization	4.07
5. Pay / Salary	4.05
6. Benefits	4.01
7. Recognition & Rewards for good work	3.86
8. Supervision and Feedback (Relationship with Immediate Supervisor)	3.84
9. Communication within the Organization	3.68
10. Promotion Opportunities	3.55
11. Operating Policies and procedures	3.25

Table B.6 Ranking of Job Factor Importance by Generation

a. Generation Y	Mean
1. Maintaining a Work/Life Balance	4.63
2. Pay / Salary	4.22
3. Nature of the Work Itself	4.14
4. Supervision and Feedback (Relationship with Immediate Supervisor)	4.06
5. Promotion Opportunities	4.02
6. Trust within the Organization	3.98
7. Working relationships with Coworkers	3.86
8. Benefits	3.82
9. Recognition & Rewards for good work	3.67
10. Communication within the Organization	3.55
11. Operating Policies and procedures	3.25

b. Generation X	Mean
1. Maintaining a Work/Life Balance	4.51
2. Nature of the Work Itself	4.26
3. Pay / Salary	4.06
4. Working relationships with Coworkers	4.04
5. Trust within the Organization	4.01
6. Benefits	4.00
7. Supervision and Feedback (Relationship with Immediate Supervisor)	3.83
8. Recognition & Rewards for good work	3.81
9. Promotion Opportunities	3.71
10. Communication within the Organization	3.50
11. Operating Policies and procedures	3.01

c. Baby Boomers	Mean
1. Maintaining a Work/Life Balance	4.25
2. Nature of the Work Itself	4.19
3. Working relationships with Coworkers	4.09
4. Pay / Salary	4.04
5. Benefits	4.00
6. Trust within the Organization	3.97
7. Recognition & Rewards for good work	3.85
8. Supervision and Feedback (Relationship with Immediate Supervisor)	3.82
9. Communication within the Organization	3.68
10. Promotion Opportunities	3.46
11. Operating Policies and procedures	3.25

Table B.7 Normality Test Results

	Age Group as Independent Variable		Generation as Independent Variable	
Factor (Dependent Variable)	**Anderson-Darling Statistic**	**p value**	**Anderson-Darling Statistic**	**p value**
Supervision	10.421	<0.005	10.133	<0.005
Fringe Benefits	3.366	<0.005	3.076	<0.005
Co-workers	7.308	<0.005	7.99	<0.005
Nature of Work	5.369	<0.005	4.479	<0.005
Communication	1.083	0.008	1.074	0.008
Pay / Promotion potential	1.829	<0.005	1.948	<0.005
Absorption	1.167	<0.005	0.783	0.042
Dedication and Vigor	1.261	<0.005	1.08	0.008

APPENDIX C

INSTITUTIONAL REVIEW BOARD EXEMPTION

UAHuntsville
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Jason Gilliam
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November 11, 2009

Dear Mr. Gilliam,

As chair of the IRB Human Subjects Committee, I have reviewed your proposal, *Age Related and Generational Differences in the Job Satisfaction and Work Engagement of the DoD Knowledge Worker,* and have found it meets the necessary criteria for exemption from review according to 45 CFR 46. I have approved this proposal, and you may commence your research. Please note that this approval is good for one year from the date on this letter. If data collection continues past this period, a renewal application must be filed with the IRB.

Please contact me if you have any questions.

Sincerely,

Dr. Nicholaos Jones
Chair, UHSC

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