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Factors Influencing U.S Army Personnel Meeting Body Mass Index Standards

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Walden University
2014

Abstract

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Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

U.S. Army Regulations require soldiers to be fit, as excessive weight negatively impacts their readiness, health, and morale. A quantitative study examined if personal, behavioral, and/or environmental factors predict a soldier's self-efficacy and body mass index. Data were obtained from 117 soldiers on 6 scales: the Armed Services Vocational Aptitude Battery, the Army Physical Fitness Test, the General Self-Efficacy Scale, the Stress Management Questionnaire, the Lifestyle Assessment Inventory, and the Multifactor Leadership Questionnaire. Multiple regression analysis was used to determine if personal (intellectual capabilities and physical fitness), behavioral (lifestyle and stress management), and/or environmental (supervisor leadership) factors predict self-efficacy and body mass index in a convenience sample of battalion personnel. The analysis showed that lifestyle and stress management behavioral factors predict self-efficacy, whereas physical fitness predicts body mass index. In addition, there were significant correlations between self-efficacy, personal factors, and behavioral factors; between personal factors, behavioral factors, and body mass index; and between behavioral and environmental factors. Positive social change implications include the U.S. Army using these findings to promote healthy lifestyles, reduce stress, and increase physical fitness among soldiers to achieve higher self-efficacy and a lower body mass index. These findings also suggest that the military services would see better physical readiness by considering personal, behavioral, and environmental factors to meet standards.

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Dedication

This dissertation is dedicated to a special soldier who died while in route to a training mission with the battalion SPC Hill (R.I.P.), to all the males and females actively engaged in the global war on terror, and to all the fallen freedom fighters. This dissertation is also dedicated to all the families, especially military brats like my own daughter, Jaiden Lynn Theus, family and friends who actively support their soldiers, admire them, and give them the energy to “Drive On.”

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I also want to thank my fellow candidates for their feedback and constructive criticism in class, as well as the participants for their selfless service and participation in this research. My acknowledgment would not be complete without a thanks to Dr. Lori LaCivita, Program Director for Organizational Psychology at Walden University, for her wisdom, patience and proactivity, the Walden Institutional Review Board (IRB), and the (DA) of the Army Human Research Protections Office (AHRPO) for their reviews and guidance for ethical compliance as well everyone who gave copyright for all tools and materials used in this research. Last but not least, I would like to thank you for reading my Dissertation and the U.S. Military (Army) for making physical fitness its first priority and the Engineer Battalion for giving me permission and the opportunity to conduct this research.

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Chapter 1: Introduction to the Study

In the United States, obesity is at a record high, leading to many health and financial problems (Heinen & Darling, 2009). Parks and Steelman (2008) claimed that obesity does not only create health issues and anxiety for those dealing with it, but also forces industry, government, and insurers to pay for treatment**.** In addition, companies also bear the related cost of absenteeism (Parks & Steelman, 2008). Researchers have identified several factors leading to obesity, including no willpower, personality, poverty, gender, body makeup, eating habits, and age (Caperchione, Duncan, Mummery, Steele, & Schofield, 2008; Fuemmeler, Baffi, Masse, Atienza, & Evans, 2007; Heng, 2011; Kim, Bursac, DiLillo, White, & West, 2009; Marchese & Healey, 2008). Researchers have suggested that weight correlates with intent, diet, physical activity, stress level, and how much time a person spends socializing (Fuemmeler et al., 2007; Gordijin, 2010; Hare, D'Onfro, Hammack, & Falls, 2012; Neumann & Heng, 2011).

Numerous studies exist on obesity in the general civilian population; however, most are not directly applicable to military personnel (Adams & White, 2009; Almond, Kahwati, Kinsinger, & Porterfield, 2008; Sutin, Ferrucci, Zonderman, & Terracciano, 2011). In an early military study conducted post World War II, Altus (1949) examined the relationship between individual intellectual scores and weight, and concluded that a relationship exist among them. Despite significant investment in obesity research, little research has examined weight issues in the military (Finkelstein, Fiebelkorn, & Wang, 2003). The National Research Council (NRC; 2004) reviewed several military weight management programs and concluded that success in fitness training relies on having a

fitness plan and steps to implement and monitor those plans supported by exercise and education programs. In other military-related studies, researchers connected weight issues with exercise, lifestyle, education, and diet management (Kieffer & Cole, 2012; Pļaviņa, 2008; Shrestha, Combest, Fonda, Alfonso, & Guerrero, 2013).

Active duty populations in the military are held to higher standards than the general population and are expected to be physically and mentally fit to respond to the requirements of their position (NRC, 2004). All military personnel are required to meet height and weight standards, which most civilian jobs do not require (Department of Defense Directive [DOD] 1308.1, 2004; Army Regulation [AR] 600-9, 2013, Air Force Instruction {AFINST] 40-501, 2007, Marine Corps Order [MCO] 6110.3, 2008, 2011; Chief of Naval Operations Instruction [OPNAVINST] 6110.1J, 2011). Although it is assumed that most service members are physically fit, many struggle to meet weight requirements (Bacon, 2010). To address this dilemma, there is a need to explore system factors that affect successful weight management. The following chapter presents the background, problem statement, purpose, research questions, theoretical basis, and significance of the study.

Background of the Study

AR 600-9 (2007) Army Weight Control Program posits that excessive body weight "connotes a lack of personal discipline…detracts from military appearance… and may indicate a poor state of health, physical fitness, or stamina" (p. 1). This generally characterizes the related research findings on obesity (Bowles et al., 2008; Harrow, Cordoves, & Hulette, 2006; Naghii, 2006). James, Folen, Garland, and Davis (1997)

reported that about 40% of involuntarily discharged soldiers are released for being overweight, costing the DA $28,000 per soldier.

Almond et al. (2008) reported that approximately 1.4 million active duty personnel (57%) were overweight; males accounted for 62% and females 32%. Almond et al. also explained that being overweight and obese added to DOD health care costs, estimated at $64 billion annually. Bacon (2010) claimed that more than 35% of soldiers fail to meet height and weight standards, and more than 6% soldiers exceed assessed body fat standards. The U.S. Department of Veterans Affairs (2013) reported $37.2 billion in hospitalization costs in 2009 due to heart failures and projected an estimated $30 billion will be spent on heart disease over the next decade.

It is critical for soldiers to meet weight standards if they want to be promoted or make progress in their career in the military (Anderson, 2013). Soldiers who do not meet weight standards are barred from reenlisting, are barred from promotion, and are put up for discharge from the service if they continuously fail to meet the standard (AR 600-9, 2007). When soldiers are pushed to create a plan to overcome weight problems, they may develop alternative methods to meet their weight goals (Bacon, 2010). Bacon (2010) described how soldiers took risky measures to meet weight standards, many of which might be viewed as dangerous to their health. Bacon observed that soldiers were using methods such as pills, liposuction, and laxatives to meet set regulation standards.

Some tentative resolutions have been offered to address the issue of weight in the military. For instance, James et al. (1997) proposed a behavioral and a cognitive-behavioral modification program that used an inpatient and outpatient treatment plan for

weight management. James et al. found that short-term exercises (e.g., two 20-minute exercise sessions) were more effective than prolonged hours and rigorous exercise times. Waller, Kaprio, and Kujala (2008) suggested that purposeful leisure-time physical activity was associated with a decreased rate of weight gain (p. 360).

Weight gain is exponentially costly; it is correlated with several variables and has been the focus of multiple research efforts in recent years (Hospitals & Health Networks, 2008; Keane et al., 2012; Parks & Steelman, 2008). Researchers have indicated several possible reasons for obesity and being overweight (Fuemmeler et al., 2007); however, regardless of cause, being obese or overweight is not acceptable in the military because of the nature of the job. For instance, all active duty soldiers may be expected to run, walk, or swim long distances in order to accomplish a mission; in such situations, excess weight could be problematic (AR 600-9, 2007).

In this study, I examined factors leading to soldiers being overweight in the U.S. Army in an effort to gain insight into:

1. Personal factors (intellectual capabilities and physical fitness), Behavioral factors (lifestyle and stress management), Environmental factors (supervisor leadership), and Self-efficacy that impact soldiers meeting weight standards.
2. The role of system factors in fostering self-efficacy, which in turn impacts soldiers meeting weight standards.
3. Psychological, educational, and motivational components in fitness programs that could impact soldiers meeting weight standards.

The results of this study can be used to explain the difference between physically fit service members and those who do not meet Army weight standards. They could also be a basis for developing a combination of possible factors that positively would help manage soldiers' weight. Finally this study might serve as a foundation for future studies to explore in depth self-efficacy and its role into the obesity phenomena, and possibly shift to an individually based instructional approach than just a diet based one.

Problem Statement

Obesity and being overweight are not only appearance issues (AR, 600-9), but also lead to health problems (NRC, 2004) that present a financial burden to private and public organizations (Finkelstein et al., 2003). According to Magoc, Tomaka, and Thompson (2010), the total cost attributable to obesity in 1995 was approximately $99 billion (p. 429). Magoc et al. concluded that obesity was due to poor diet and physical inactivity. Heinen and Darling (2009) suggested that, aside from direct costs, estimated at $45 billion every year to U.S. private companies, obesity or being overweight incurs indirect costs. These indirect costs include not only a 27% increase in health care costs between 1987 and 2001, but also an increase in workers' compensation claims and related lost workdays (Osbye, Dement, & Krause, 2007), absenteeism (Finkelstein et al., 2005; Ricci & Chee, 2005), presenteeism (Ricci & Chee, 2005), and disability in the older adult population (NRC, 2004). Research and Development (RAND; 2011) showed that the health consequences (financial cost and personnel lost) of obesity are worse than those of smoking and drinking.

Battle readiness comes with an expectation of mental strength and physical fitness. Excellent fitness in terms of meeting Army weight standards comes with dedication and sacrifice, as well as self-efficacy (Cramer, Neal, & Brodsky, 2009). In addition, Army weight and height standards require setting boundaries for the team to be fit and acceptable according to military standards (AR 350-1, 2009). Someone who fails to *meet tape* (soldiers who do not meet height and weight standards are physically tape measured using a set process) may see meeting the weight standard as a difficult task because it can be a long process and may require energy and attention. Presently, the Army is focusing on refining calorie intake in dining facilities and creating a plan for soldiers to implement fitness activities 5 days a week for at least 1 hour a day (or as assigned by each unit commander) to address this challenge (AR 350-1, 2009). However, this practice has been less successful for some soldiers due to individual differences, stress, and a lack of motivation, planning, personal drive, self-control, and goal-setting (Caperchione et al., 2008; Khushboo & Shuchi, 2012; Neumann & Heng, 2011).

Purpose of the Study

The purpose of this study was to explore the role of Self-efficacy, Personal, Behavioral, and Environmental factors that impact on Body Mass Index (BMI) levels among U.S. Army personnel using Social Cognitive Theory (SCT). Specifically, I examined if associations exist between a soldier's BMI with Self-efficacy, Personal factors (intellectual capabilities and physical fitness), Behavioral factors (lifestyle and stress management), and Environmental factors (supervisor leadership). The intent was to

better understand military non-diet overweight issues to promote service members to stay fit, exploiting their own personal strengths.

Research Questions

I explored three main research questions:

Research Question 1: Do Personal (intellectual capabilities and physical fitness), Behavioral (lifestyle and stress management), and Environmental (supervisor leadership) factors predict Self-efficacy among active duty Army personnel?

H_{01}: Personal, behavioral, and/or environmental factors do not predict Self-efficacy among active duty Army personnel.

H_{A1}: Personal, behavioral, and/or environmental factors predict Self-efficacy among active duty Army personnel.

Research Question 2: Do Personal (intellectual capabilities and physical fitness), Behavioral (lifestyle and stress management), and Environmental (supervisor leadership) factors predict BMI among active duty Army personnel?

H_{02}: Personal, behavioral, and/or environmental factors do not predict BMI among active duty Army personnel.

H_{A2}: Personal, behavioral and/or environmental factors predict BMI among active duty Army personnel.

Research Question 3: Is self-efficacy associated with BMI among active duty Army personnel?

H_{03}: Self-efficacy is not associated with BMI among active duty Army personnel.

H_{A3}: Self-efficacy is associated with BMI among active duty Army personnel.

Theoretical Basis

This dissertation's conceptual framework was based on Bandura's (2004) SCT. Bandura (1997) developed the SCT to describe factors that affect and determine behavior. SCT was used to understand how the determining military system factors: personal, behavioral, and environmental factors and self-efficacy work to influence self-efficacy and subsequently BMI (see Figure 1). Specifically, I focused on Self-efficacy, Personal factors (intellectual capabilities and physical fitness), Behavioral factors (lifestyle, stress management level), and Environmental factors (supervisor leadership) that influences BMI.

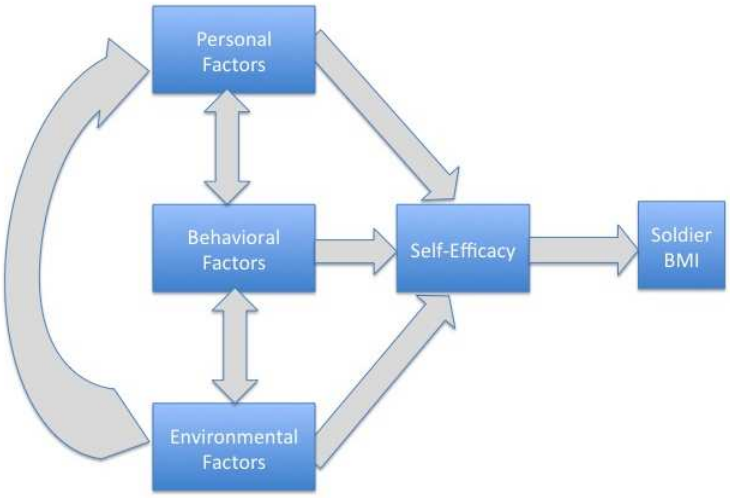

Figure 1. BMI Determination Model.

The individual is the ultimate solution to his or her BMI issues, and motivation, positive influence from leaders, and operating under limited stress can be instrumental in addressing BMI problems. The SCT was used to also help Army leaders focus on other non-diet related causes of overweight issues and encourage their soldiers in overcoming

weight problems and improving their performance. The intended outcome was to demonstrate that, under certain leadership, when employees are judged favorably, they have the ability to exploit their potential and demonstrate self-efficacy in overcoming BMI issues, becoming more resilient and improving their performance. The overall layout of the variables is in compliance with Bandura's definition of SCT that can be interpreted as knowing the outcome (weight) would motivate soldiers (the military) to adjust the predictors (personal, behavioral, and environmental factors) to achieve meeting weight standards.

SCT has been used in several studies to illustrate relationships or correlations between several factors (Plotnikoff, Lippke, Courneya, Birkett, & Sigal, 2008). According to the SCT, there are four principal influences on the learning of new attitudes or behaviors: drives, cues, responses, and rewards (Pajares, 2002; Plotnikoff et al., 2008). Researchers who have used SCT also employed Bandura's self-efficacy theory (Pajares, 2002; Plotnikoff et al., 2008).

Nature of the Study

I used a multiple regression analysis to examine the relationship among self-efficacy, personal, behavioral, and environmental factors in predicting BMI. I used archived data from soldier enlisted record briefs and physical training scorecards for a sample of convenience representative of an Army Battalion size unit (n=~400). I also used data obtained from the same sample using an array of instruments to capture self-efficacy, lifestyle, stress management, and supervisor leadership. These served predictors of a single criterion BMI. Possible relationships to be examined include: (a) self-efficacy

is predicted by personal factors, behavioral factors, and environmental factors among Army personnel, (b) BMI is predicted by personal factors, behavioral factors, and environmental factors among Army personal, and (c) self-efficacy is associated with BMI among soldiers.

I determined whether self-efficacy, personal, behavioral and environmental factors impact soldier BMI in an Army battalion. The variables were selected based on the research provided in the literature review on Self-efficacy, Personal factors (intellectual capabilities and physical fitness), Behavioral factors (lifestyle and stress management), and Environmental factors (supervisor leadership). The participants included active duty U.S. Army soldiers who completed paper versions of the instruments for data collection, including the General Self-efficacy Scale (GSE), Lifestyle Assessment Inventory (LAI), Stress Management Questionnaire (SMQ), and Multiple Leadership Questionnaire (MLQ), they were available in paper format for the participants to complete. I did not anticipate any use of online communication but, if need be, the Army Knowledge Online (AKO) e-mail system and database (all military regulations, forms, publications, all soldiers files, and records are accessible via AKO active duty login) was used to communicate with them.

Permission from an Army battalion, the Walden IRB, and the Army Human Research Protections Office (AHRPO), the office of Research Ethics and Compliance Officer was secured. I had physical access to soldiers and ask their permission to participate in the research. Participants who choose to participate met face-to-face with me where they completed the GSE, SMQ, LAI, and MLQ, as well as provided their

ASVAB and APFT scores, and height and weight verified against what is recorded on their ERB and PT scores cards.

Definition of Terms

Armed Services Vocational Aptitude Battery (ASVAB) scores: The ASVAB, as defined by the ASVAB Testing Program (2012), is a "multiple-aptitude battery that measures developed abilities and helps predict future academic and occupational success in the military" (para 1). Robert, Goff, Anjoul, Kyllonen, and Stankov (2000) explained that ASVAB is used to measure intelligence. ASVAB scores (used here as a measure of intellectual capabilities) as explained by the U.S. Army (2012) and as broken down in soldiers' ERB, are derived from an intellectual multiple skills assessment tool that measures the following: word knowledge (WK), arithmetic reasoning (AR), mechanical comprehension (MC), automotive and shop information (AS), electronic information (EI), mathematic knowledge (MK), general science (GS), paragraph comprehension (PC), and assembling objects (AO). All soldiers must have an ASVAB score to enlist (AR 601-210, 2011).

Army Physical Fitness Test (APFT) Score: A scorecard that reflects three consecutive events graded on Army APFT Standards based on participants' age and height: (a) how many pushups a soldier can do in 2 minutes, (b) how many sit-ups a soldier can do in 2 minutes, and (c) how quickly a soldier can run a 2-mile track. The height and weight of the soldier are measured at the time of the PT exam. All soldiers receive a PT score every 6 months, or at least twice a year (AR 350-1, 2009).

Body Mass Index (BMI): The most commonly accepted measure of obesity in the United States is BMI (Centers for Disease Control and Prevention [CDC], 2000). BMI = Weight (Pounds)/Height (inches)/Height (inches)*703. According to the CDC (2000), overweight means a BMI greater than 25, while obese means a BMI greater than 30. The BMI index was used as a continuous variable. Standard weight for males' waist is set at 40 inches and 35 inches for females (NRC, 2004).

Physical Training (PT): The workout intensity level, defined as the systematic use of exercises to promote bodily fitness and strength (U.S. Army Field Manual 22-20; U.S. Army Training Circular [TC] 3-22.20).

Weight: The measurement of body mass in pounds. In the U.S. Army, acceptable weight is determined according to a screening table, in which weight and height are presented by gender and age (AR 600-9, 2006). Army weight standards table is reflected in Table 1.

Assumptions and Limitations

Assumptions underlying this research were as follows: (a) The sample was taken from one battalion with a less than 400 soldier, and a targeted participant group of 130. This sample should be representative of the population within the battalion at 99% margin of error, 50% (worst case scenario) and less than 10% confidence interval (Gravetter & Wallnau, 2007); (b) The number of responses per predictor exceeded 15, which is acceptable; (c) Participants truthfully answered the three instruments assessing self-efficacy (GSE), stress management (SMQ), and supervisor leadership (MLQ); (d) The participants were able to read all material accurately as presented; (e) The Army

ASVAB was an indicator of a participant's intellectual capabilities; (f) The APFT was an indicator of individual physical fitness; and (g) The participants were good readers of their own stress management. SCT was effective in predicting that personal, behavioral and environmental factors are good predictors of self-efficacy.

A limitation to this study is that it took place in just one battalion. Further, gender and food were excluded. Food or calorie intake at the battalion is limited due to a diet philosophy that relies on studies about food intake and weight. This research does not reflect that philosophy, as people who diet for years may continue to gain weight (Thomas, 1995).

Significance of the Study

This study has the potential to challenge the status quo of indefinite dieting as a means of addressing overweight issues and obesity. For the Army or military services, this research could give leaders direction concerning how to create an efficient working environment that ensures that soldiers' fitness meets or exceeds military standards. Fulfilling fitness standards restores soldier strength and reflects the physical readiness element of units, thus instilling confidence in the Army among private investors. Government and private investors invest billions toward obesity programs (for children and adult civilians) because obesity is prevalent.

This research contributes to positive social change by offering information on predicator value, possibly the impact, of Self-efficacy, Personal, Behavioral, and Environmental factors on BMI. Individuals and their families may benefit from this research, as many companies invest in health programs. The study serves as a model of

change to address overweight and obesity without focusing on methods that have not worked, like diet. Soldiers' were provided with a new understanding of how their BMI may fluctuate based on their Self-efficacy, Intellectual capabilities, Physical fitness, Lifestyle, Stress management, and Supervisor leadership.

Summary and Transition

In Chapter 1, I provided an explanation of the study's background, problem statement, purpose, research questions, theoretical base, nature, key terms, assumptions, limitations, delimitations, and significance. In this quantitative, regression study, I explored the impact of Self-efficacy, Personal, Behavioral, and Environmental factors on soldiers' BMI. More specifically, I determined if Self-efficacy assessed by the GSE, Personal factors assess by the ASVAB and APFT, Behavioral factors assessed by the LAI and SMQ, and Environmental factors assessed by the MLQ predict BMI. This research is useful not only for soldiers seeking to determine what level of exercise works best for them to maintain a BMI that meets Army standards, but also for leaders and organizations seeking to create a work climate that encourages soldiers to maintain Army-required weight standards.

According to SCT, a person's environment, their motivation, and their self-efficacy can drive what a person does (Bandura, 1997; Saklofske, Austin, Rohr & Andrews, 2007). This view of self-efficacy is also explained in positive psychology (Schultz & Schultz, 2004). Proponents of self-efficacy theory state that humans do their best when put in a positive, acceptable, favorable environment, and exploit best processes for positive outcome in everything they do (Schultz & Schultz, 2004). In this study, I

determined whether any of the Personal factors (ASVAB and APFT), Behavioral factors (LAI and SMQ), and Environmental factors (MLQ) predict soldier Self-efficacy as well as determine the relationship between Self-efficacy and BMI.

In Chapter 2, the literature review contains a discussion of past research on overweight and obesity issues in the workplace (i.e., Military, Army, Navy, Marine Corps and Air Force) and reflects the particular variables chosen for this study. The literature focused on Personal factors (Intellectual capabilities and Physical fitness), Behavioral factors (Lifestyle and Stress management), and Personal factors (Supervisor leadership) as well as the Self-efficacy. The literature aids in understanding why obesity is a problem across the nation and deserve focus globally, in the military services, particularly in the Army. A review was done on current weight management programs across the services, compare them and conclude on why this current study is an addition to the Army, the military, the general population and the research committee.

Chapter 3 is the research design and outline details on the population to be studied. Chapter 3 includes guidance on the assumptions, the statistical analysis, the methodology, the population sampling, the procedures and instruments that are used. The methodology is a layout of how the research was conducted; the validity and reliabilities of the instruments are discussed as well. Finally some ethical guidelines, and inform consent are reviewed to assure clients clear understanding of what they are going to participate. Chapter 4 covers the sample of participants, checks the assumptions, presents the descriptive analysis, and the results of three regression analyses that respectively address the three research questions. Chapter 5 is a discussion of the interpretation of the

results, limitations of the study, recommendations for future research, and implication for positive social change.

Chapter 2: Literature Review

Introduction

The main objective of the research, which was focused on one Army Battalion, was to test construct and test participants' Intellectual capabilities as measured by the ASVAB, Physical fitness as measured by the APFT score, their Lifestyle as measured by the LAI, their Stress management as measured by the SMQ, participants' immediate Supervisor leadership measured by the MLQ related to their Self-efficacy measured by he GSE subsequently to their BMI. In this chapter, I explored the problem, the purpose of the study, the theoretical framework, and the methodology and summarize the literature as it pertains to the relationships between the Criterion variables and Predictor Variables.

The resources for this literature review were retrieved from the Walden University Library, University of Phoenix Library online, Laureate International Universities' online database, U.S. Army Europe physical library, and online databases. Basic words researched included *obesity*, *weight issues*, and *weight* and various combinations of the following words: *stress*, *exercise*, *physical activity*, *leadership*, *age*, *diet*, *veterans*, *military*, *soldiers*, *Army*, *body mass index (BMI),* and *attitude*. Databases searched included Academic Search Complete, Business Source Complete, CINAHL, ERIC MEDLINE, PsycARTICLES, PsycINFO, PsycBOOKS, PsycCritics, and SocINDEX. The year was not limited due to the lack of specific information on the topic. Some articles were requested through Walden University's document delivery service (Bandura, 1977a, 1997; Bandura & Adam, 1977; Bandura, Adams, Hardy, & Howells, 1980; Bandura & Schunk, 1981).

Military Research: National Research Council Study

Only a few accessible publications about the causes of obesity and overweight in military populations were found. The NRC (2004) addressed options to make existing weight management programs in the military better by focusing on the relationship among diet, gender, age, ethnicity, and weight. The NRC suggested several experts' reviews, findings, and opinions on military communities' weight management options. The NRC conducted a literature review on weight management within components of the DOD with an emphasis on age, gender, ethnicity, and their impact on weight management.

Even though the NRC (2004) study was focused on few specific variables, it largely pinpointed that fitness and maintenance of it and appropriate body-fat by all military service members are affected by genetics, developmental history, physiology, age physical activity, diet, environment and social factors. The research classified these factors into three main categories: biologically programmed factors (genetic, age, physiology), factors that could be manipulated by the individual (diet, physical activity) and factors that require institutional or environmental changes (worksite design, facilities available) (p.4).

Another very interest point suggested by the NRC (2004) report was that BMI was positively correlated with soldiers' performance in a one-mile run and inversely correlated the pushups scores. Men and women results differed in the study but for both group faster running group was associated with higher injury rate. Fitness was also asserted to be an independent predictor of mortality. The NRC suggested that low fitness

was associated with high mortality and high fitness was positively associated with adequate BMI.

The NRC (2004) explained that obesity affects the DOD in that it limits the population within which soldiers can be recruited from, and that it decreases DOD retention efforts. The NRC also found the following: (a) 80% of newly recruited soldiers who cannot meet BMI standards leave the service before completing their first term of enlistment, which is usually 3 to 4 years; (b) increased exercise is essential in effective weight/fat loss. Behavioral and net diet energy modification, in lifestyle choices, is essential for weight lost and it maintenance; (c) education on food portion control and energy balance is essential in meeting BMI standards; (d) structured support from professional counselors, coworkers, or commanders leads to more success in weight management programs; (e) environmental changes in the home, the workplace, and the community in discouraging overeating and under activity are necessary in keeping with the weight loss and weight maintenance in the services; (f) regular monitoring is needed such as weighing in at least monthly in normal tenses and weekly for individuals in weight loss programs; and (g) obesity and overweight prevention consists of identifying the victims early and providing education as soon as they are recruited, mandating structured and/or unstructured exercise as the way of life. Most military effort on weight management has been focused on either food, controlling food, or on turnover rates. If the weight management program does not help fix the problem, then overweight soldiers are left without many options. Therefore, the soldiers voluntarily separate or they are forced to do so by the physical demand of the nature of their job.

Several studies have been conducted on weight in the general population and employees; however, there is limited research on the weight of soldiers. In the findings of such research, BMI has been associated with eating habits, activity level, willpower, poverty, gender, and cultural background (Fuemmeler et al., 2007; Gordijin, 2010; Hare et al., 2012; Neumann & Heng, 2011). Unlike most civilian employees, soldiers are required to meet BMI standards that are proportional to their age, weight, height, and size. Weight levels that exceed Army standards can result in soldiers being discharged from the military.

Military Research: Other Recent Studies

Military researchers showed that the military population is about 1,445,000 uniformed and 580,049 civilians in support (Brown, 2010). The Army accounts for 548,000 military, 243,172 civilians, 73,902 females, 88,093 officers, 456,657 enlisted (Brown, 2010, February). The Marine corps accounts for 203,095 military, the Navy 323,000 uniformed with 182,845 civilians, the Air Force has 323,000 uniformed military and 7,396 civilians, finally the Coast Guard account for 41,000 military (Brown, 2010). The military main mission being to fight the nations wars and come home with the least injuries and causalities (Brown, 2010). For that reason fitness and training are crucial in all military components to meeting the mission (Brown, 2010).

In a study on active duty soldiers, Shrestha et al. (2013) suggested, “using an accelerometer with web-based feedback capabilities plus mandatory physical training does not assist in significant weight loss or ability to pass the APFT height/weight standards among overweight/obese soldiers” (p. 86). Shrestha et al. (a) studied only 28

participants who were all overweight or obese or who had failed an APFT prior to the beginning of the study; (b) only used web-based feedback; there was no way to verify understanding of the feedback or counseling; and (c) found that mandatory physical training does not help in weight loss or passing APFT, without bearing witness that the participant actually did workout when they said they were, or that they entered the correct number in the difficulty in working out.

Shresthat et al. (2013) confirmed that self-reported studies are more likely to have results that may not reflect factual events. The TV show Biggest Looser has proven that people do lose weight when monitored and mentored to work out more often than they usually do. Concerning warriors in transition, Kieffer and Cole (2012) suggested that physical fitness and diet are necessary to help manage their weight. Plavina (2008) who studied military personnel suggested that smokers have lower sit-ups and pushups numbers during an APFT testing. Plavina also concluded that the height and weight index was correct with the amount of exercise performed during an APFT testing. Lifestyle and APFT results are good predictors of weight.

Kieffer and Cole (2012) studied soldiers in warrior transition units (whose mission was to heal) and stated that physical fitness, lifestyle changes, and education are primordial elements in maintaining weight standards. Kieffer and Cole used self-reported data and did not address how personal data and behavioral and environmental factors affected weight. These are limitation that the current research could fill or help expend future researches in these directions.

Military Service Fitness Programs

Cawley and Maclean (2012) studied military enlistment standards for height and weight and percentage of body fat and came to the conclusion that between 2007 and 2008, 5.7 million males and 16.5 million females exceeded the Army's enlistment standards for weight and body fat (p. 1357). Cawley and Maclean also found that "military-age adults ineligible for enlistment because they are overweight and over fat more than doubled for men and tripled for women between 1959 and 2008" (p. 1348). Even though I used medically measured height and weight, I did not study active duty personnel but individuals that meet the enlistment age and could have potentially enlisted. Weight standards were originally to avoid having underweight soldiers, but in recent years, more soldiers are overweight; therefore, the weight and height table is mostly use to eliminate overweight soldiers (Cawley & Maclean, 2012). Summary of military fitness programs are summarized in Table 3.

U.S Army Fitness and Body Composition Program

The U.S Army weight control program had been renamed in 2013 to be known as "the Army body composition program" (AR 600-9, 2013). The use of the word *Army* is for all Active duty Army personnel, the Army National Guard, and reserve (AR 600-9, 2013). Even though the regulation applies to all Army components, the focus here is as it applies to regular army also known as active duty. The name change is for clarity, political correctness and more importantly optimizing battle readiness.

Under normal circumstances Army soldiers are expected to do physical training 3 to 4 times a week in a group or on an individual basis depending on mission requirements

(Williamson et al., 2009). Knapik, Rieger, Palkoska, VanCamp, and Darakjy (2009) studied the principle behind Army Physical Readiness Training (PRT) and come to the conclusion that PRT is set to not only provide the best training there is, but to "improve physical fitness, to prevent injuries, and empower soldiers to take control of their own fitness. Specific drills are used regularly, precisely and progressively to promote confidence and self-discipline" (Knapik et al., 2009, p. 1353). The APFT consists of measuring the soldiers' height and weight the morning before a PT test, 2 minutes pushups, 2 minutes sit-ups, and a 2 miles run time in accordance with the Army male and female's standards and the individuals soldiers age (AR 600.9, 2013). Anyone who fails to score at least the minimum standards (60 points in each event and meet height and weight) is considered a PT failure. These individuals are put into a remedial program to be retested every month, and at the commanders' discretion, in a weight control program; they cannot attend military schools or assume leadership position (Anderson, 2013). Units are responsible for their own remedial programs.

Army physical training also referred to as the physical readiness guide, gives soldiers information about the conditioning and movement drills, strength, mobility, and stretching techniques as well as information about nutrition (FM 7-22, 2012) The FM gives specific sets of exercise for preparation drills, conditioning drills, flexibility training, military movement drills, climbing and relaxation drills. All training is already schedule on a yearly basis but that schedule can be modified at each unit discretion and mission at hand. The main goal of the physical readiness training is to help each soldier obtain certain level of fitness, including passing a PRT. The test scores requirements are

captured in AR 600-9 (2007), however a new APFT and a new Army PRT. Fewer than 10 Army components have adopted the new testing system.

In the Army, specific Department of Army (DA) forms are used for reporting physical fitness scores to include: (a) A DA Form 705, APFT Scorecard that is used to record all any official APFT scores. The administrator has to be an NCO or an officer and the supervising individual has to be a staff sergeant and above, (b) A DA Form 268, Report to Suspend Favorable Personnel Actions (FLAG). This form is used only when a soldier is flagged for not meeting PT standards or for having any type of adverse action, and (c) A DA Form 4856, Developmental Counseling Form which should be one of the most used form in the Army not only for telling soldiers and leaders what they did or did not do, but to also give them clear guidance on what should or should not have been done, write their expectations and to write their goals for future improvements. The DA 4856 is also used as evidence in any action when trying to prove that a service is good, bad or needs improvements. A DA Form 5500-R, Body Fat Content Worksheet (Male) and a DA Form 5501-R, Body Fat Content Worksheet (Female). Male and females body fats when overweight are measured tape differently (Williamson et al., 2009). This may look like too much information for people who are not in the profession but it is just to give a perspective that everything is not a person passed or failed, but it is very well documented on paper and online.

Body fat tape measurement in the Army is done in the presence of a Sergeant or above, and in by a female for Females soldiers and/or in the presence of a female (AR 600-9, 2013). The tape measurement was done in Army physical fitness uniform and the

tape itself should be of a non-stretchable material, preferably fiberglass; cloth or steel tapes are unacceptable. According to AR 600-9 (2013) the procedure of body fat measurement for males consists of: a) an abdomen measurement around the belly button at an relax stage, down to the nearest ½ inch b) a neck measurement right below the larynx (Adams apple), and rounded to the nearest ½ inch and recorded. The procedure for female body fat measurement consists of a neck, waist and hip measurement and rounded to the nearest ½ inch (AR 600-9, 2013). Army weight for height as well as body fat percentage standards are as shown in Table 1 and Table 2, respectively.

Table 1

U.S. Army Height and Weight Minimum and Maximum Standards

Height (in Inches)	Minimum Weight	Maximum Weight Age 17-20	Maximum Weight Age 21-27	Maximum Weight Age 28-39	Maximum Weight Age 40 +
58	91				
59	94				
60	97	132	136	139	141
61	100	136	140	144	146
62	104	141	144	148	150
63	107	145	149	153	155
64	110	150	154	158	160
65	114	155	159	163	165
66	117	160	163	168	170
67	121	165	169	174	178
68	125	170	174	179	181
69	128	175	179	184	186
70	132	180	185	189	192
71	136	185	189	194	197
72	140	190	195	200	203
73	144	195	200	205	208
74	148	201	206	211	214
75	152	206	212	217	220
76	156	212	217	223	226
77	160	218	223	229	232
78	164	223	229	235	238
79	168	229	235	241	244
80	173	234	240	247	250

Note. AR 600-9, 2013

Table 2

U.S. Army Body Maximum Body Fat Standards (%)

Gender	Age 17-20	Age 21-27	Age 28-39	Age 40 and up
Male	20%	22%	24%	26%
Female	30%	32%	34%	36%

Note. AR 600-9, 2013

U.S Navy Fitness and Body Composition Program

Croteau (2000) suggested a U.S Navy three 1-hours-a-week remedial program that expends during 16 weeks. Croteau suggested that the navy remedial program in good in improving physical fitness in general within Navy saliors. The study only studied 27 subjects where 29% were APFT failures, and the rest failed tape or body fat (Croteau, 2000). The main focus on this Navy remedial program was physical readiness training (PRT) which combines with a Navy inpatient care constitute the Navy weight management program (Croteau, 2000). The author also attributed the few failure rates (11 to 22%), to the fact that the individuals who fail were already injured.

Navy physical readiness training here consisted of four events: 1.5 mile run, 2 minutes pushups, 2 minutes curl ups and a body composite measurement (Croteau, 2000). Anderson (2013) reported in the Army Times that in 2013, for 100 Navy soldiers who fail their PRT 149 body composition failures compare 105 who would have failed the body composition testing in 2004. Consequences include getting relieved from the Navy after three consecutive failures of any of the PT components (Anderson, 2013). More details about the Navy fitness program and requirements can be found in the Navy instruction (OPNAVINST 6110.1J, 2011).

U.S. Marine Fitness and Body Composition Program

The U.S. Marine Corps more like U.S. Army weight control rules and regulations take weight issues very seriously. They do weigh-ins the same day as they test their service members for physical fitness (Marine Corps Order (MCO), 6110.3, 2008). Marine enlisted and officers have policies in place that repeated failures lead to bar from reenlistments, restriction to military schools for careers advancement (MCO, 6110.3, 2008). The Marine Corps also has a counseling process in place like all the other services. When a Marine fails their fitness evaluation, they get put on notice, they are given options to help them improve and choices to use weight control programs to ameliorate their conditions (MCO, 6110.3, 2008). If they fail again the same process repeats until the Marine's chances are expired and if a special waiver is not approved they are discharged from their current duties.

The Marine's program, its requirements as well as the appeal process are structured known as the "Commander's Body Composition/Military Appearance Programs" (MCO, 6110.3, 2008). The specific cycle or process is use by company commanders to deal with soldiers who fail their physical fitness testing the first, second, third time. The main thing is that Amrine's with a record of failure are counseled, they are place on restriction from being able to transfer to a different unit for a second failure, they are removed from promotion listing, they are not eligible to attend special schools" (MCO, 6110.3, 2008). More details about the Marine fitness program and requirements can be found in the Marine Corp Order (MCO, 6110.3, 2008).

U.S. Air Force Fitness and Body Composition Program

Worden and White (2012) studied the U.S. Air Force Physical Fitness Test (AFPFT), which consisted of a timed 1.5 mile run, an abdominal circumference measurement, 1 minute for push-ups and 1 minute for sit-ups. Worden and White suggested that the Air Force incorporate more variety to make the Air Force more competitive in a combat environment. Haddock et al. (1999) suggested that individuals in the AF who exceed weight standards do not necessary leave unhealthier lifestyle than individuals who do not exceed weight standards.

Robbins (2002) also examined active duty Air Force personnel and found that excessive weight gain is an increasing concern among the ranks. Robbins et al. (2006) also concluded that low intensity training on active duty Air Force personnel, consisting of booklet and a 52 weekly emails weight control program, was effective in preventing weight gain (Robbins, 2002). This conclusion is in alignment with the current study suggestion that a close involvement of a weight coach or of a supervisor could make their goals much more effective. Air Force personnel are given 4 changes for failures before adverse actions are taken to relieve the soldiers from their duties (Anderson, 2013). More details about the Air Force fitness program and requirements can be found in the Air Force instruction (AFINST, 40-501, 2007).

Military Services Weight Management Programs Comparison

Every year several individual express the desire to join the U.S. military services, whether they are qualified or not. Each branch in the military has standards and requirements because of the nature of the job. Under DOD guidance all military

components (Air Force, Army, Marines, and Navy) have to have fitness standards that maintain healthy services members and a force capable of battle readiness (DOD Directives, 1308.1, 2004). These standards include passing a minimum PT score required for their service, and limiting the number of dependent a single service member could have before joining to two (Table 3). The height and weight as reflected in each component height and weight table (see Table 1). The ASVAB scores the following: (a) Navy and Air Force requires a minimum overall score (GT) of 50 point, (b) the Marine requires a minimum GT score of 32, (c) the Army requires a minimum of 31 GT score, and (d) the Coast Guard requires a minimum of 45 point GT score (U.S. Military, 2013). In the following paragraphs I provide summaries of the service components weight management standards in the effort to explain why more broader effort that empower the individual need to be put in place other than diet and PT only focus.

Table 3

U.S. Air Force, Army, Navy, and Marine Corps Fitness Program Parameters

	Physical Fitness Testing	PT Min. Scores	Physical Training	Weight Management Program	ASVAB GT Min.	Maximum Dependent	References
Army	2 mn pushups	50	PRT	Remedial and Weight control Program (diet based) or Inpatient	31		AR 600-9, 2013
	2 mn sit-ups	50				2	AR 600-9, 2007
	2 miles run measured	50		Battle Readiness		or waiver	FM 7-22, 2012
	Body Fat Tape measurement	20 - 34%		Overall Fitness			DoD Directives 1308.1
Air Force	1mn pushups	75	PRT	Remedial and in patient program	50	2	
	1mn sit-ups	75		Battle Readiness		or waiver	DoD Directives 1308.1
	1.5 miles run measured	75		Overall Fitness			AF Instruction 40-501
	abdomen circumference measure	20 - 32%					& 502
Navy	2 mn pushups	50	PRT	Remedial and Inpatient Program	50	1	
	2 mn curl-ups	50		Battle Readiness		or waiver	DoD Directives 1308.1
	1.5 miles run measured	50		Overall Fitness			OPNAVINST 6110.1J,
	Body composite measurement	22 - 34%					2011
Marine	pull ups/flexed Arms Hang	50	PRT	Commander's Body Composition/ Military Appearance	32	2	
	2 mn Crunches	50		Programs		or waiver	MCO, 6110.3, 2008
	3 miles run measured	50		Battle Readiness			DoD Directives 1308.1
	Body composite measurement	18 - 26%		Overall Fitness			

Body Mass Index

Obesity is a prominent issue in the military; soldiers can be discharged if they do not maintain their BMI in accordance with military standards (AR 600-9, 2007). The Military Services Fitness Database noted that between 1999 and 2007: (a) Some 2400 soldiers were discharged for being overweight or not meeting weight standards as per Regulation 600-9, (b) A tenth of that number (2,342) were discharged in the Army for failing their APFT or PT, and (c) More than a third of men in uniform did not meet weight standards in 2009. (Bacon, 2010, p. 3) Given the defense budget cut of $487 billion over the next decade that has been announced by President Obama, the first targeted personnel to be chaptered out of the Army are overweight soldiers who cannot meet BMI standards.

Obesity is a problem in the United States, where 65% of adults are categorized as being overweight and about 30% are considered obese (Marchese & Healey, 2008). Obesity is a problem in the workplace that leads to increased illness-related absenteeism and lower productivity (Parks & Steelman, 2008). Absenteeism costs businesses about $26 million each year (Parks & Steelman, 2008). RAND (2011) showed that the health consequences of obesity are worse than smoking and drinking. In an effort to relieve the negative effects of obesity on productivity, physical fitness, and wellness programs have been offered to individuals to increase their knowledge on ways to manage this problem.

Caperchione et al. (2008) studied how weight gain can influence a person's decision to work out. Caperchione et al. concluded that BMI is a good predictor of a person's intention to engage in physical activities. Attitudes toward weight-related issues

are the strongest predictor of intentions. The relationship between BMI and physical activity intention is mediated by attitude and perceived behavioral control (Wammes, Kremers, Breedveld, & Brug, 2005). In addition, Caperchione et al. found that intention to work out is a factor in weight. Fuemmeler et al. (2007) found that 78% of people attributed the obesity epidemic to a lack of willpower. In addition to the intention to work out, a person's perception of the future may affect their health. Adam and White (2009) asserted that the way in which people value their future has to do with how they get involved in health-promoting behaviors. The time perspective (the idea of having something to look forward to) statistically has a significant correlation with BMI (Adam & White, 2009). This idea could also be understood within the framework of Erikson's (1968) psychosocial life stage theory, in which some life stages reflect more hope and will to life than others. Furthermore, when individuals have proven themselves and are comfortable, they may not strive for more.

Researchers have associated obesity with a lack of physical activity, a lack of willpower, poor eating habits, a lack of education about diet, and poverty (Fuemmeler, et al., 2007). Schulte et al. (2007) argued that work-related stress impacted employees' behaviors such as external substance abuse and leisure activity, which have been proven to relate to gain. However, these findings were mainly based on qualitative research and participants' reports, which could be questioned. The weakness in prior research findings (limited research, lack of quantitative results, and database of self-reported weight or stress level) could also explain why there is no research available that presents a solution to BMI issues in the workplace.

Most studies about obesity and BMI have been focused on the general population. There has been minimal research on soldiers' BMI and how it fluctuates in their milieu that is available through the U.S. Army Europe library, Walden University Library, University of Phoenix, or Laureate International's database. No researchers have addressed BMI issues without considering food or eating habits. There is no research on Army soldiers' BMI in which BMI was seen as a product of soldiers' way of life, behaviors, and environment. Most of the research in this area has been qualitative in approach and has been focused on how to solve the obesity problem as a whole (Bodner, 2006; Creswell, 2009). Gaps in prior studies about obesity and BMI could be filled by pursuing a quantitative analysis, using a theoretical framework that had been used by researchers in similar studies, and analyzing the following variables in a military setting: self-efficacy, personal factors (intellectual capabilities and physical fitness), behavioral factors (lifestyle and stress management), and environmental factors (supervisor leadership).

Social Cognitive Theory

According to the SCT, setting/ knowing a person's goals can lead to behavioral changes (Bandura, 1977; Ferguson & Wojnowicz, 2011). In the SCT, several factors such as personal, behavioral, and environmental factors can be used to explain a behavior, a state of mind, or a condition. Individuals are a product of their surroundings, their worldview, and social upbringing. The American Psychological Association (APA; 2010) suggested that SCT is the belief that people learn from other people that they look up to and emulate some behaviors accordingly (Bandura, 1977).

Bandura's (1977) SCT, also known as social learning theory, was used to measure variables like leadership style to quantify the way the leadership style affects the soldiers' weight positively or negatively and whether being married impacts their weight. Factors like self-efficacy, intellectual capabilities, physical fitness, lifestyle, stress management, and supervisor leadership accentuate Bandura's (1980) premise that humans exploit their intellect, learn from their environment, and imitate the leaders that inspire them the most. According to self-efficacy, a person's intellect is a part of how efficient he/she is in making judgments and is usually correlated with decision-making (Roberts et al., 2000). A person's lifestyle determines the good and bad choices (according to social judgment) he/she makes. Bandura (1977) claimed that personal, behavioral, and environmental factors make up the milieu in which a person lives and works.

Bandura defined self-efficacy as an individual's judgment of his or her own ability to classify and execute a plan to attain the desired type of performance using his or her environment, behavior, and cognition (as cited in Bores-Rangel, Church, Szendre, & Reeves, 1990). Bandura (1997) and Cramer et al. (2009) also linked cognition to high self-efficacy, where high goal-setting increases the likelihood of imagining and achieving successful scenarios, and low self-efficacy increases the likelihood of visualizing failure and failing.

Joet, Usher, and Bressoux (2011) and Bandura (1997) have concluded that self-efficacy beliefs are related to motivational, affective, and behavioral outcomes in a variety of domains. Moderate correlations have been found between self-efficacy expectation in high school students and actual skills, as well as academic performance

(Bores et al., 1990). Sanna (1992) confirmed prior social facilitation research in that high self-efficacy-evaluated participants performed better than non-evaluated participants, whereas low self-efficacy-evaluated participants performed worse than unaided participants. Sanna implied that when other people are watching or paying attention to a person's performance, the individual might feel pressure, which improves his or her performance. Given that people's life choices and their social and natural environment dictate how well they do in life, individuals with high self-efficacy have longer perseverance, lower anxiety, and higher achievement than individuals with low self-efficacy (Bandura, 1997; Multon, Brown, & Lent, 1991; Pajares & Schunk, 2005).

Employees are more productive when they are fulfilled and happy (Aamodt, 2007). Employee satisfaction is defined as an employee's level of positive feelings toward his or her work (Locke, 1976; Spector, 1997). Employee satisfaction could mean a better return on an investment. If the rationale behind the positive psychology theory is functional, then soldiers who feel satisfied in their environment feel good about themselves. Such soldiers may be expected to care more about their attire and work harder to maintain their physique, displaying greater self-efficacy.

Determining the impact of personal, behavioral, and environmental factors on obesity may help researchers acquire data on the necessary intellectual and physical components of programs needed to help individuals manage proper fitness levels. Cognitive psychology is useful in understanding perception, thinking, and decision-making (Schultz & Schultz, 2004). Figure 1 reflects that perception and shows how the concept introduced by SCT is a skeleton of this current research. The thought process,

feelings, and perceptions are what constitute cognition. Gordijin (2010) suggested that people who feel overweight, even when statistically they are not, expect other people to judge them as being overweight. Additionally, Gordjin reported that people are obsessed with appearance and slim looks; therefore, most people think they are fat. Half of females and one-quarter of males believe that they are fat (Gordijin, 2010). Gordijin also noted that media should focus on the impact of negative consequences of weight on human health because it makes people more conscious about their calorie intake, food, and levels of exercise. Gordijin studied people who believed that they were overweight; Gordijin did not compare these individuals to others and failed to define the standards by which they were measured.

There remains a need for research on individuals' knowledge of their personal capabilities and how leaders can encourage self-efficacy through their motivational and educational skills. Sweet, Fortier, Strachan, and Blanchard (2012) and Pan et al. (2009) reported that a person with high self-efficacy might predict consistent physical activity. Researchers confirmed a relationship among task (Millen & Bray, 2008; Strachan, Woodgate, Brawley, & Tse, 2005; Sweet et al., 2012), barrier (Blanchard et al., 2007; Millen & Bray, 2008; Strachan et al., 2005), scheduling (Strachan et al., 2005; Woodgate & Brawley, 2008), self-efficacy, and physical activity. Self-efficacy may have a direct influence on physical activity and an indirect correlation with outcome expectation (Sweet et al., 2009). With self-efficacy being a vital factor in this study, I explored a military environment to determine soldiers' self-efficacy. The variables that guided my study are BMI, leadership, stress management, and intelligence.

Self-Efficacy

Unlike Waaktaar and Torgersen (2013) who suggested that self-efficacy "is mainly genetic, not learned" (p. 651), I start with Bandura's (1994) theory that self-efficacy is learned and people believe in their own capabilities to accomplish their set goals. According to Schulz and McDonald (2011), a motivational video did not improve physical activity but did improve weight loss behavior and/or weight loss self-efficacy. Self-efficacy and physical activity are either measuring different things or that they are indifferent to one another. This is not the focus of this research, but future researchers may wish to explore this issue. Self-efficacy is measurable and can be modified in one-way or another (Schulz & McDonald, 2011).

Sweet et al. (2012) and Pan et al. (2009) reported that self-efficacy (Bandura, 1997) is a consistent predictor of physical activity. Sweet et al. and Bandura (1997) suggested a behavioral theory of self-efficacy whereby an individual's confidence or belief in themselves affects their ability to achieve result in a given event. The results individuals attain are dependent on their behavior, experiential factors, and perceptions of their environment (Pajares, 2002). Sweet et al. studied the connections among self-efficacy, outcome expectation, and physical activity as well as the reverse relation among outcome expectation, self-efficacy, and physical activity. Sweet et al. concluded, "Self-efficacy was significantly related to physical activity, which confirms theory and past research" (p. 324). Sweet et al. stated that, based on prior research, "increasing expected positive outcomes of physical activity would increase self-efficacy for physical activity;

therefore, it is possible that for physical activity, outcome expectancy operates to influence self-efficacy" (p. 324).

Clark, Abrams, Niaura, Eaton, and Rossi (1991) conducted a study to validate the Weight Efficacy Life-Style Questionnaire (WELQ) and predict treatments on obesity. Clark et al. found that among the five factors that the questionnaire measured in eating behaviors (negative emotions, availability, social pressure, physical discomfort, and positive activities), all factors have to be controlled at the same time to predict positive outcome in weight management. Self-efficacy and weight (BMI) are related.

Determining Factors Model

The research model is to construct and test participants' Intellectual capabilities as measured by the ASVAB, Physical fitness as measured by the APFT, Lifestyle as measured by the LAI, Stress management as measured by the SMQ, immediate Supervisor leadership as measured by the MLQ related to their self-efficacy measured by the GSE and subsequently their BMI.

Personal Factors

The personal factors of the model consist of intellectual capabilities measured in terms of ASVAB scores, and physical fitness as measured in terms of the APFT scores.

Armed Services Vocational Aptitude Battery.

Intelligence capabilities are reflected in a soldier's scores on the ASVAB, a standardized Army test that has to be taken by any soldier prior to working in uniform. According to Roberts et al. (2000), "The ASVAB is a great predictor of intelligence and intelligence is what the test (ASVAB) tests" (p. 85, 90). In this study, the ASVAB was used as a

measure of intellectual capabilities. All soldiers must have an ASVAB score to enlist (AR 601-210, 2011). Intelligence involves knowledge, mastery, and the ability to learn or reproduce information learned. In a study on adolescent developmental abilities and exercise, Davis et al. (2011) found that exercise improved individuals' intelligence and that physical fitness was associated with high intellectual capabilities in youth. Davis et al. also reported prior findings on adult studies, indicating that for 55- to 77-year-olds, exercising by performing a 20 minute per day to 40 minute per day over 6 months aerobic walk exercise increased prefrontal cortex activity and led to improvements on a test of executive function (Colcombe et al., 2004).

Altus (1949) reported that that "Army trainees discharged for inaptness were of lower mentality than the ones who graduated" (p. 201). Altus concluded that a "more intelligent soldier was generally heavier and taller than the less intelligent, when intelligence is defined by a score on the Army General Classification Test"(p. 209). Altus's study could be seen as limited because the population examined consisted only of males trainees. However, Altus stated that there cannot be a causational relationship between height, BMI, and ASVAB scores due to factors such as diet, medical conditions, and other issues that could affect height and weight. On the other hand, there was a correlation between mental ability and weight. The ASVAB can offer more information that correlates specific skills with weight.

In researching intelligence and weight, the National Institutes of Health (NIH; 2012) reported that individuals' intellectual capabilities could affect their decision-making and their dedication/ability to work out. The U.S. Department of Health and

Human Services (HHS) and the NIH (2012) suggested that people who struggle with a math learning disability may also struggle with day-to-day tasks such as estimating a bill or judging calories as a part of a diet. Therefore, something in an individual's brain could motivate him or her in their life choices to keep them fit. A person's drive to exercise (controlled or not, organized or not) may be a product of his or her brain function. In researching data in the military, it is rare to find soldiers with higher ranks who cannot pass their PT tests, regardless of their age.

There have been limited studies relating intellectual capabilities to weight in the general population as well as in the Army. Altus (1949) concluded that higher intelligence was correlated with heavier and taller soldiers. The current study takes place in a non-U.S. Army Training and Doctrine Command (TRADOC) setting, a regular active duty army unit, and involves the determination of whether any of the participants' intellectual capabilities components as stated in the ASVAB relate to their weight.

Army Physical Fitness Test.

The APFT consist of measuring the soldier's height and weight the morning before a PT test, 2 minutes pushups, 2 minutes sit-ups and a 2 miles run time in accordance with the Army male and female's standards and the individuals soldiers age (AR 600.9, 2013). A standard weight and height measure is done the day that the PT test is given and the scores are recorded for each soldier. Each soldier who fails the height and weight standards is taped in accordance with Army regulations.

Physical Readiness.

Physical readiness is one of the most critical and complex variables in this study. Soldiers' physical readiness is calculated by an exercise test measuring their fitness every 6 months while they are on active duty, not on deployment status, and not on profile (TC -22.20). Different individuals value exercise differently and benefit from different exercise movements differently. Exercise is a combination of routine and programmed activities that can be effective in maintaining physical fitness (Thompson, Jarvie, Lahey, & Cureton, 1982). According to Mata et al. (2011), any successful weight management regime has exercise and eating habits as essential functions. Neumann and Heng (2011) found that the attention focused during weight training-type exercise impacts muscle activity and heart rate. Working out involves commitment as well as drive, which rely upon the self-efficacy of the individual or team.

In most early weight and fitness studies, high activity level correlated with higher fitness (Caperchione et al., 2008; Fuemmeler et al., 2007; Wammes et al., 2005). However, most of the findings have not been specific, such as "one hour exercise per day is associated with long term fitness" (Irish Medical Times, 2010, p. 39). The advantage of this research is being able to use an active standardized measure of physical activity level (PT scores) for all of the participants in three consecutive events to define the fitness of each soldier at the time of the test. Furthermore, organized exercise is a requirement across the Army. Active duty soldiers strive to have at least 5 hours of workout days per week, (Monday-Friday, nondeployed units) on active duty components (TC -22.20). Even though the members of a company, platoon, or squad are likely to perform the same

exercise, the effect of exercise on each soldier varies, and the difference could be attributed to self-determination, self-efficacy, or other factors. The individual definition of exercise may be different for every soldier.

All units have to follow the Army exercise manual as detailed in TC-22.20, but every soldier has the option of working out on his or her own time after work hours. In addition, individuals' internal feelings on the amount of exercise they have engaged in could differ. Some people may feel more *worked out* when they do endurance exercise (long distance running, biking, or rowing), whereas others may feel more worked out when they do weight lifting, leg or upper body workouts, or light workouts such as organized yoga. The effort that soldiers put into exercise is reflected in their external physique as well as their APFT score. It is important to determine how Army standards of APFT scores are reflectors of soldier fitness (TC-22.20) and how that fitness is reflected in service members' BMI.

Behavioral Factors

Behavioral factors were measured using the service members' lifestyles as measured using the LAI, and their stress management level as measured by the SMQ.

Lifestyle and Behavior

In military studies, the NRC (2004) suggested a behavioral modification philosophy which states that lifestyle choices can be modified for weight loss and maintenance. The NRC review was mainly focused on food diet, gender, age, and ethnicity. The lifestyle focus in this study is on overall 29 questions used to measure

lifestyle that accounts for fitness, car safety, drugs, tobacco, alcohol, sleep partners, and stress level.

According to Kuhl et al. (2013), individuals who have a set goal, watch their calories, and are able to control their life choices are more likely to be successful in controlling their BMI. Kuhl et al. looked into food, fluid intake, exercise, and the amount of time spent watching TV. Even though the researched population was preschoolers, Kuhl et al.'s suggested that lifestyle behavior choices impact BMI is also valid among older populations is tested in this research.

Istiany (2012) studied adolescents in Indonesia and tested if there were any relationships between BMI, gender, and lifestyle choices with bone mineral density in urban areas. Istiany concluded that lifestyle (defined here as consumption habits and healthy living habits) was correlated with bone mineral density (BMD). Istiany suggested that lifestyle constituted only 10.24 % of BMD and that 89.76 % of BMD was made of other factors. Istiany suggested that adolescents in that area drink more milk and be more active for healthier, stronger bones. Istiany did not define or find any relationship between BMI and lifestyle, but showed how lifestyle can affect weight because BMD or weight is used in the computation of BMI. While the study population included adolescents, Istiany's findings relate to this study in that lifestyle choices do affect people and need to be studied closely, especially in adult populations.

Another component of lifestyle is marital status, which could include being single, married or being separated. It is not known whether marriage contributes to the problem of obesity. The and Gordon-Larsen (2010) argued that individuals who socialize

with overweight individuals are more likely to become overweight than those who do not. If this is the case, individuals with overweight spouses may be more likely to become overweight compared to those who are single. Adam and White (2009) suggested that married individuals may have accomplished most of their life goals and may, therefore, have less to look forward to than single individuals; they also may be less concerned about how they look. Furthermore, peace of mind is less likely to motivate married couples to work out; thus, they may be more likely to gain weight. Brown (2011) found that married males' weight was positively correlated to their BMI and to their marketability for work. Brown proposed tighter public policies that would offer penalties for high BMI.

Following Mertler and Vannatta (2010), a multiple regression is appropriate for the proposed research because there are multiple quantitative IVs and one quantitative DV. Khushboo and Shuchi (2012), who also used multiple regressions in studying BMI and stress in females, concluded that the perceived stress index was correlated with BMI. Kent and Worsley (2009) conducted a study on trends of BMI, diet, and lifestyle between 1976 and 2005 in Australia and found that there could be a relationship between lifestyle and BMI on adults. Kent and Worsley concluded that the habit of eating between meals was positively associated with BMI, and that affluent lifestyle patterns seemed to suggest higher BMIs while prudent lifestyles were correlated with lower BMIs. Kent and Worsley suggested some types of relationships but recommended that further studies needed to be done to confirm or deny the possible connection between BMI and lifestyle.

Stress Management

A soldier's job is stressful due to separation from family and peers, long hours, and deployments to hostile zones. Schulte (2007) confirmed that job-related stress is associated with high BMI. In addition, long working hours (12 hours to 24 hours for some soldiers), workplace hard work, long hours, and physical demands can increase stress levels and impact BMI. Parks and Steelman (2008) and Iwasaki, Zuzanek, and Mannell (2001) concluded that physical fitness is associated with stress management level. Additionally, a stress management level correlates with job satisfaction (Wood, Olmstead, & Craig, 1989). In a study on mice, Hare et al. (2012) concluded that current or past stress deferred or inhibited the anxiolytic effect of exercise without affecting exercise itself. The effect of stress on exercise raises questions on the neuropsychological effect of stress, which concerns an individual's ability to exercise and the impact of exercise on stress management level.

Some work out to release stress, but it is not known if stress leads to weight gain. Kim et al. (2009) claimed that, in prior research, stress was associated with body weight through indirect mechanisms. First, emotional eaters, in response to stress, have a preference for high-fat and/or sweet foods, which increase their body weight (Epel, Lapidus, McEwen, & Brownell, 2001; Ng & Jeffery, 2003). Second, stress could deter some individuals from engaging in physical activities (Ng & Jeffery, 2003). Third, stress could interfere with weight loss in overweight or obese individuals by affecting their dieting habits (Bellisle et al., 2004; Cerrelli et al., 2005; Hainer et al., 2006).

Effective stress management can be associated with mental and physical wellness (Parks & Steelman, 2008). Stress management has been found to decrease chemical dependency and improve physical activity in general populations (Kim et al., 2009). Various environmental components could have an impact on a soldier's stress management level (Epel et al., 2001; Ng & Jeffery, 2003). Considering these findings, it is important to determine how stress management levels affect soldiers' BMI in an Army battalion.

Environmental Factors

Environmental factors consisted of leadership style as measured by the MLQ. Leadership style is a measurement of the soldiers' immediate leaders, team leaders, platoon sergeants or leaders, as seen in the eye of the soldiers using the MLQ questionnaire.

Leadership is an executive ability to empower the motivation or competency of other individuals in a group (Gibson, Ivancevich, & Donnelly, 1991; Humphrey, 2012). Self-efficacy theorists affirm that individuals under the guidance of a leader, who are conscious of being graded on a scale of some sort, have a higher chance of performing compared to individuals under their own control (Bandura, 2007). In organizations, including the military, leaders seek to drive employees to stay motivated or inspired to come to work every day and to get the mission accomplished (AR, 350-1, 2007). In this research, I explored how leaders and their leadership styles impact their subordinates' BMI. Certain leadership styles may be associated with employee fitness.

James et al. (1997) proposed a behavioral and a cognitive-behavioral modification program for weight management that included inpatient and outpatient treatment plans for soldiers. Leaders can influence soldiers' behavioral modification as far as their weight is concerned. Army leaders work with their soldiers not only individually, but also in groups. Army leaders should act like coaches. An active duty setting should be the perfect environment for any leader or coach to employ motivational skills and instill self-efficacy in soldiers who may need help. An active duty setting is a control and disciplined environment.

Sauer (2011) examined how newly-assigned leaders affect their subordinates and concluded that low-profile leaders are more effective when using a directive style, whereas high-status leaders are more effective when using a participative style; the effects of leadership are based on subordinates' perceptions of the leader's self-confidence. Sauer also reflected how leadership actions can affect group or individual performance. In the Army, soldiers' physical fitness reflects high performance or self-discipline, which positively reflects on the company, the battalion, and the U.S. Army (APFT awards). Fit, confident, and competent leaders may be more likely to inspire their employees by example.

Summary and Transition

Chapter 2 contained a summary of findings on BMI and related issues. I provided information on what gaps exist in this area of research. In this study, I addressed research gaps related to self-efficacy, intellectual capabilities, physical fitness, lifestyle, stress management, and supervisor leadership as potential predictors of BMI for the soldiers of

an Army Battalion. Researchers have indicated that a lack of willpower, time perspective, eating habits, physical activity, gender, and other nonquantified factors impact BMI. Overweight and related issues cost billions of dollars to taxpayers and constitute a burden for society, companies, and victims. Given that distinct factors are possibly related to BMI, weight gain as a product of an environment, stress, and behavior mismanagement, were explored in this research.

In Chapter 3, I discuss the research design and give more details about the population to be studied. I document the methodology and methods employed in the dissertation research. In addition, I discuss the theory used in the research and present the methods used for data collection, analysis, and interpretation. Finally, I discuss the validity of the instruments used as well and the ethical procedure to use in case any issue arises. Chapter 4 covers the sample of participants, presents the descriptive analysis and the results of three regression analyses that respectively address the three research questions. Chapter 5 discusses the interpretation of the results, limitations of the study, recommendations for future research, and implication for positive social change.

Chapter 3: Research Method

Introduction

Dong Jun and Wi-Young (2012) performed a regression analysis to determine the relationship between physical activity and obesity in Korean adults as measured by percent body fat assessed via bioelectrical impedance analysis. The present study was patterned after Dong Jun and Wi-Young's research with an exception that the Predictors stem from participant responses to four instruments, the GSE, MLQ, SMQ, and LAI as well as their recorded ASVAB and APFT scores. BMI is the Criterion calculated from height and weights recorded on participant PT scores cards.

Research Design

The purpose of this research was to apply SCT to assess the impact of identified factors on the BMI of U.S. Army soldiers. In this research, data were collected using existing service member recruitment and physical training record. The remaining data were drawn from established standardized questionnaires (Gregory, 2007; Rudestam & Newton, 2007). In this quantitative study, a multiple regression analysis was used to determine if personal, behavioral, and environmental factors as well as self-efficacy impact BMI levels among 130 U.S. Army personnel. Specifically, I examined if associations exist between soldier BMI with Self-efficacy, Personal factors (ASVAB, and APFT), Behavioral factors (LAI, SMQ), and Environmental factors (MLQ) among active duty Army personnel in a battalion. According to Mertler and Vannatta (2010), a multiple regression analysis is appropriate for research involving multiple quantitative predictor variables and one criterion variable (p. 21).

I made assumptions that all regression assumption will be met. Assumptions included sample size, collinearity, linearity, limited errors in the measurements, fixed variance IVs, and normality of variables or relationships. A multiple regression analysis produced a model summary, an ANOVA, and a coefficients table that explain all possible regressions (Mertler & Vannatta, 2010). The design used multiple regression analysis to quantify the impact of Personal, Behavioral, and Environmental factors on male soldier BMI in a battalion. The variables were as follows: one calculated, normed criterion variable: BMI, two numerical predictors: APFT and ASVAB scores, three scaled predictors: GSE, LAI and SMQ, and one categorical predictor Supervisor leadership (Transformational, Management by exception, or Laissez-faire) that was dummy coded. If any of the linear regression analysis assumptions are not met, measures will be taken to correct the shortfall prior to running the analysis. The criterion is BMI, the most commonly accepted measure of obesity in the United States: BMI = weight [pounds] / height [inches] / height (inches)*703.

In this study, I explored three main research questions:

Research Question 1: Do Personal (ASVAB and APFT), Behavioral (LAI and SMQ), and/or Environmental (MLQ) factors predict Self-efficacy (GSE) among active duty Army personnel?

H_{01}: Personal, Behavioral, and/or Environmental factors do not predict Self - efficacy among active duty Army personnel.

H_{A1}: Personal, Behavioral, and/or Environmental factors predict Self-efficacy among active duty Army personnel.

Research Question 2: Do Personal (ASVAB and APFT), Behavioral (LAI and SMQ), and/or Environmental (MLQ) predict BMI among active duty Army personnel?

H_{02}: Personal, Behavioral, and/or Environmental factors do not predict BMI among active duty Army personnel.

H_{A2}: Personal, Behavioral and/or Environmental factors predict BMI among active duty Army personnel.

Research Question 3: Is Self-efficacy (GSE) associated with BMI among active duty Army personnel?

H_{03}: Self-efficacy is not associated with BMI among active duty Army personnel.

H_{A3}: Self-efficacy is associated with BMI among active duty Army personnel.

Population, Sampling, and Sampling Procedures

The population consisted of active-duty Army soldiers from the United States. Lai and Kelley (2011) explained that the choice of a sample number correlates with power and size. Under either of the following: (a) central limit theory, where n=16σ2/W2 where the variance is σ2 and W2 is the width, or (b) the basic formula n=4/W2 = 1/B2, where B is the standard error (SE) and n the size needed, at a 10% error. I needed n=100. Therefore, the number of actual duty soldiers for my study (130) was a reasonable number for the sample for five IVs (Gravetter & Wallnau, 2007).

The sample size of 117 respondent out of 130 recruits within a population of 400 service members, at a confidence level of 99% (margin of error) with 50 percentage come out to about 9.31 confidence interval is representative (Gravetter & Wallnau, 2007). The sample was coded and broken down as follows: (a) self-efficacy (self-efficacy below 30,

self-efficacy above 30), (b) ASVAB scores: numeric GT score, (c) APFT scores: numeric read, (d) lifestyle (very healthy, average healthy, and unhealthy), (e) stress management level: numerically quantified, and (f) leadership style (transactional, transformational, passive avoidant): dummy variables. Reporting of the research was done without reference to personally identifying data; however, I kept track all of the information belonging to the same service member.

As the population was relatively small (n=~400), with the permission from the Army Battalion, Walden IRB, and DOD approval, I made face-to-face contact with soldiers and ask them for their participation. All questionnaires were administered in a scheduled office, one individual at a time, and no personal information was shared. Data were coded to maintain the sequence of participant answers without reviling the service member's identity. I made a verbal announcement of the main points and the intent of the research. My e-mail address, phone number, and office location were provided to all Battalion personnel in an effort to give everyone the opportunity to anonymously make contact.

Instruments

Data for some of the predictor variables and the criterion involved in this study were taken from service member records to include participant ERBs (ASVAB scores), and APFT scorecards (APFT scores, height and weight for BMI). The remaining predictor data were collected through four standardized instruments, including the GSE, LAI, SMQ, and MLQ. The following sections review each of the data sources.

Armed Services Vocational Aptitude Battery

I gathered data on soldier intellectual capabilities in terms of ASVAB scores, which are reported on the soldiers' ERBs. The ASVAB is referred to in the GT score and is an intellectual multiple skills assessment tool that measures the following: WK, AR, MC, AS, EI, MK, GS, PC, and AO. The GT score is accessed of each participant's ERB printout that they had while responding to the questionnaires. This score was read.

The validity test for the ASVAB has shown that it is a valid tool in predicting soldier performance not only during training, but also at their everyday performance. The validity of the ASVAB was rated at .69 for soldiers at their second tour of duty (OfficialASVAB.com, 2012). The reliability of the ASVAB relies on its precision to capture the same elements. The ASVAB enjoys an average reliability score of .80 (OfficialASVAB.com, 2012).

Army Physical Fitness Test

Physical fitness was reported in terms of APFT scores, reflecting three consecutive events on how many pushups soldiers can do in 2 minutes, how many sit-ups soldiers can perform in 2 minutes, and how quickly (in minutes) they can run a 2-mile track. PT scores are recorded on participants' APFT scores card and were used in this research. The PT score cards are read from the soldiers latest physical fitness test scorecards that reflect their raw score in points, their height and weight respectively in inches and pound, and accordance with Army PT scoring standards.

The APFT/ PT test scores measure cardiovascular, muscular fitness, and endurance (AR 600-9, 2013). The PT has been used to measure endurance in the military

for the longest. Currently, different services use difference element in testing as seen in Table 3. Regardless of which method is used, in early weight and fitness studies, high activity level is correlated with higher fitness (Caperchione et al., 2008; Fuemmeler et al., 2007; Wammes et al., 2005). Scoring the highest in any APFT would lead to better fitness compared to a person scoring lower.

Body Mass Index

The DV were weighted in terms of BMI as a standardized continuous number, the most commonly accepted measure of obesity in the United States. The BMI was computed using the height and weight from the APFT scorecards. Soldiers' weight is reflected on each APFT scorecard in the height and weight section. Height and weight records are kept for soldiers every time that they take an APFT test. Participants' APFT scorecards reflect their weight and height as well. I used SPSS in computing output and interpreting findings.

BMI is the most commonly used tool to measure obesity (CDC, 2000). Again there are no hard data on validity or reliability of BMI, but in terms of reflecting weight it reflects weight, even though it might not necessarily capture the weight difference between muscles fit weight and body water weight. BMI = Weight (Pounds)/Height (inches)/Height (inches)*703 (CDC, 2000). The CDC (2000) categories BMI as follows: 1) Underweight = <18.5, 2) Normal weight = 18.5–24.9, 3) Overweight = 25–29.9 4) Obesity = BMI of 30 or greater. The reliability of the measurement among all soldiers was inevitable; the same formula was used.

General Self-Efficacy Scale

Participants were asked to fill out the GSE. The GSE has been used in studies involving self-efficacy and is known as reliable, valid, and replicable (Schulz & McDonald, 2011). The GSE used is a 10-item questionnaire (English version) by Schwarzer and Jerusalem (1995). The participants were asked questions about simple life choices and they have four choices of answers (1 = *Not at all true*, 2 = *Hardly true*, 3= *Moderately true*, 4 = *Exactly true*). Their total score one the GSE was used, if a person's GSE is below 30 it is considered low and above 30 high (Schwarzer & Jerusalem, 1995).

The GSE has been used in more than 25 different countries, in more than 10 languages, and was credited as being valid, having criterion-related validity and high "internal consistent reliability" (Luszczynska, 2003, p. 2). The usage of the GSE (cross culturally) attests of its relevance in academia. Others have used self-efficacy in weight studies (Finley, Pugh, Noel, & Brown, 2012). The instrument is accessible online and does not require special steps for copyright.

Lifestyle Assessment Inventory

Participants completed the LAI to determine if their overall lifestyle was very healthy (23 -29), average healthy (17-22) or below 16 unhealthy lifestyles (Clark et al., 1991). The LAI used is a 32 question tool categorized in 11 sections asking the participants' questions about how they feel about their workout time, fitness level, car safety, relationships, sleep, etc. All of the participants needed to place a check mark on things that apply to their lifestyle. Sample questions are "I always use a belt when I

drive" or "I rarely drive above the speed limit" (Clark et al., 1991). The total LAI score was used. The instrument is publically accessible.

The LAI included a 2-week test-retest reliability coefficient ranging from .57 to .87 with an overall coefficient of .76 (Elsenrath, Hettler, & Leafgren, 1991). Even though there was evidence to support criterion-related validity, external validity has to be proven (Elsenrath et al., 1991).

Stress Management Questionnaire

Participants completed the SMQ, a validated stress self-assessment tool that measures: (a) warning signs (anger/hostility, perfectionism, time orientation, burnout, disappointment, underachievement, and tension); (b) stressors (major life events, hassles, or small daily life challenges); and (c) stress effects (physical stress effects and life-work satisfaction; Petersen, 1987; SMQ, 2012). The SMQ has 87 questions and the participant has to circle one of five choices for each question: 1 being *very rarely* and 5 being *very frequently*. The answers refer to what happened or how they felt in the past few months. The SMQ has been used for 30 years. This instrument is copyrighted and I was delivered 130 copies. In the life events section questions include: "change of residency", "injuries or illness," change of new careers or questions about life/work satisfaction," "amount of work," "level of income." It took no more than 10 to 25 minutes to complete. The total score was used. Dr. Petersen gave copyright permission.

The SMQ was reviewed in the Mental Measurements Yearbook database; Petersen (1987) found that the SMQ was a widely used test, even though there are limited

data to confirm the validity and reliability of the questionnaire. Critics in the yearbook stated that the SMQ provided mixed results on reliability and validity.

Multiple Leadership Questionnaires

I gathered information on attitude toward leadership through the MLQ, which is the most validated measure of leadership behavior. In the MLQ, leadership is conceptualized in the following categories: transformational (inspirational motivation, intellectual stimulation, idealized behavior, idealized attitude), transactional (contingent reward, management by exception), passive avoidant (management by exception, laissez-faire), and outcome (extra effort, effectiveness, satisfaction; Bass, 1997). This instrument was ordered through Mind Garden, Inc.

The MLQ has 53 questions and the first 48 questions use a 5 level scale of 0 = *Not at all*, 1 = *Once in a while*, 2 = *Sometimes*, 3 = *Fairly often*, 4 = *Frequently or always* and the last five questions are multiple choices. A sample question is “in all how satisfy are you with the leadership abilities of the team that you are rating?” or “Member of my team set high standards” (Bass, 1997). The MLQ has been credited for being an effective predictor of leadership behavior and outcome. The MLQ has been reviewed in the Mental Measurements Yearbook database and has been found to have construct validity, adequate reliability, and a strong research base (Avolio & Bass, 2004). Table 4 summarizes the IVs and associated instruments used to assess them.

Table 4

Study Predictors and Criterion and Associated Data Sources

Independent Variables	Tools
Self-Efficacy	GSE
Intellectual Capabilities	ASVAB /ERB
Physical Fitness	APFT/PT score card
Lifestyle	LAI
Stress Management	SMQ
Supervisor Leadership	MLQ

Procedures

Data collection was conducted with minimum to no risks to participants and researcher. Data were collected directly from soldiers who choose to participate in the research. Soldiers were fully informed of my intent to do conduct this research for the completion of my degree. Initial contact started with a flier attached with a copy of an informed consent given to each soldier asking for his or her participation. Soldiers who chose to participate gave their e-mail address their name and phone numbers just for the purpose of being contacted back. I collected the fliers, and if they chose to participate, I explained to the participants how the process worked in the informed consent and how to proceed. They knew what type of data was asked of them beside the questionnaires. They were scheduled to meet with me after hours, during break time, or weekend.

The participants signed a consent form for their participation and gave permission to use their ASVAB scores from their ERB; and their height, weight, and APFT scores from their PT scores card. The ERB and the APFT scorecards are held at the human

resources office (S1) where every soldier can request a copy. Participants were asked to disclose their current/latest ASVAB and APFT scores as well as their weight and height. However, the participants wrote their ASVAB scores, APFT scores, their height and weight on the envelope containing a number, and all the responses to the others tools without giving their personal information. The number in each packet was written on each tool for identification purpose. The informed consent defined me as a PhD candidate at Walden University and indicated that my role as a soldier was separate from my role as a researcher. Participants were informed that their participation was voluntary and that their information would only be used for the purposes of this research.

The participants were informed that during their one-on-one meeting with me, they would be in possession of their ERB records and their APFT scores card; they were also be given access to print one out. Information that was recorded left no personal identifier that refers back to the soldiers who gave the information. Participants were then asked to fill out four instruments: GSE, LAI, SMQ, and MLQ. No names were associated with the data; but the answers from each individual were recorded in one column to ensure the accuracy of data interpretation. All data was secured in a locked safe and is to be held for the required storage period until it is appropriately destroyed. The only person that can access the data is the researcher.

Statistical Analysis

The design followed a multiple regression statistical analysis to quantify the impact of environmental effects on the male soldiers' BMI in the designated battalion. Multiple regression equations was in the form of:

$Y1 = a + b1*X1 + b2*X2 + b3*X3+ b4*X4+ b5*X5$

Self-efficacy is a function of personal, behavioral and/or environmental factors.

$Y2 = a + b1*X1 + b2*X2 + b3*X3+ b4*X4+ b5*X5$

BMI is a function of personal, behavioral, and/or environmental factors.

Y3: (Y1 (t) = Y2 (-t))

BMI is a function of Self-efficacy.

Where Y1 reflects the analysis to Research Question 1, Y2 reflects the analysis to Research Question 2 and Y3 reflects the analysis Research Question 3. Once the data were collected, they were recorded in an Excel spreadsheet that associated all data belonging to the same individual together. Data were then imported into SPSS for analysis. The SPSS outputs were interpreted and associated hypotheses were kept or rejected.

Prior to the analysis assumptions that all regression assumption will be met, sample size, outlier, collinearity, linearity, limited errors in the measurements, fixed variance IVs, and normality of variables or relationships will be check first and any issued addressed prior to compiling any results. A multiple regression analysis produced a model summary, an ANOVA, and a coefficients table that explain all possible regressions (Mertler & Vannatta, 2010). The design used multiple regression analysis to quantify the impact of personal, behavioral, and environmental factors on male soldier BMI in a battalion. The variables were as follows: one calculated, normed criterion: BMI, two numerical predictors: APFT, ASVAB, three scaled predictors: GSE, LAI, and SMQ, and one categorical predictor MLQ (Transformational, Management by exception, or

Laissez-faire) that was dummy coded. If any of the linear regression analysis assumptions are not met, measures were taken to correct the shortfall prior to running the analysis.

Interpretation

If proven, the hypotheses would support the following conclusions: $\beta i \neq 0$, which means that for all or some of the relationships the null hypotheses would not be rejected. Failure to reject the alternative hypotheses, suggests that associations exist between soldiers' self-efficacy (GSE), their BMI with Personal factors (ASVAB and APFT), Behavioral factors (LAI and SMQ), and Environmental factors (MLQ) among soldiers in an Army Battalion. In that case the following conclusions would be true.

1. Personal factors (ASVAB and APFT), Behavioral factors (LAI and SMQ), and/or Environmental factors (MLQ) significantly predict Self-efficacy (GSE) among Army personnel.
2. Personal factors (ASVAB and APFT), Behavioral factors (LAI and SMQ), and/or Environmental factors (MLQ) significantly predict BMI among Army personnel.
3. Self-efficacy is associated with BMI among Army personnel.

Ethical Procedures

Voluntary Participation

The participants, Army soldiers from a given battalion, were only on volunteer basis; they were fully informed of what the study was about. They read and explained the informed consent. The informed consent also fully disclosed their right to withdraw at any time during the research process. The main task in this research was to collect data

from U.S. Army soldiers in their work environment. I attempted to collect error-free data in accordance with American Psychological Association (APA) ethical guidelines. There were some ethical concerns that were taken into consideration during this research to scale the risk factors. Some of the ethical codes could have generated complaints and legal challenges in organizational psychology are the ethical clause of justice and fairness. Psychologists are required to be fair and just, stay within their scope of practice, respect boundaries, and eliminate personal biases or prejudices that affect participants (APA, 2010). Eliminating legal issues is equally important. In order to do so, it was important to refrain from discrimination or bias against individuals based on personality, gender, race, and country of origin (APA, 2010; AERA, APA, & NCME, 2008). It is important to note that data could be collected without Walden IRB approval and U.S Army research committee endorsement of Walden's IRB Approval.

Informed Consent

Fully explained consent forms were read and signed by all participating individuals. Consent is important because it gives more legitimacy to the data and it protects the participant in that they know what they are participating in. Recording of the information was secret, and soldiers' data were coded to ensure that their questionnaire feedback was matched with their personal data. Obesity and being overweight are sensitive topics, and all words used and questions asked were weighed and screened to eliminate potentially offensive material and bias. I avoided asking questions that might make the participants feel inferior in one way or another, and they were to pick up a packet go fill it out at their convenience and bring it back.

This research had limited risks because no laboratory experiment was administered. Emotional risk would occur if the participants felt insecure after the questioning process or become self-conscious about the things they could do or could have done. All questionnaires were administered in an office at a secure location, one individual at a time or in a group whichever work best for the participants, and no personal information was shared. If an issue arouse, a nine-step Canadian ethical decision-making process (Bersoff, 2008) was adopted, and all committee members were informed. All participants were debriefed on the standards, conditions, and risks prior to the data collection. A risk assessment of weather conditions and risks, if any, was made a day prior to meeting with the participants. Another potential risk was data loss; but all collected data are stored in a locked drawer for the next 5 years, as required by APA (2010).

Confidentiality

Confidentiality is important in the profession of Armed Forces. Confidentiality is taken seriously in this study and only I have access to raw data from the participants and the committee members only when need be. The informed consent explained the rules of how the data is to be kept confidential, secured in a safe where I only have access. Per APA (2010), it was important to explain to the participants the limits of confidentiality, in the case of threat to harm oneself or other and the duty to warn. There is no evidence for the need to anticipate any confidentiality breach; but, in any a loss of data occurs, all measures would have been taken to notify the committee members, the participants, and

the unit in order to avoid future damage and offer short-term and long-term solutions for any potential victims.

Summary and Transition

In this chapter, I focused on the proposed study's research design and the process of conducting the study. I addressed the population, the sample, the instruments to the used, and their validity and reliability. I laid out the groundwork on how the research preceded from participation solicitation, data collection, analysis and interpretation. Finally, I addressed the statistical procedures and analysis, and concluded with the ethical dilemma and possible solutions to them, to include voluntary participation, informed consent, and confidentiality. Chapter 4 covers the assumptions, the sample of participants, presents the descriptive analysis and the results of three regression analyses that respectively address the three research questions. Chapter 5 discusses the interpretation of the results, limitations of the study, recommendations for future research, and implication for positive social change.

Chapter 4: Results

The purpose of this study was to explore a BMI predicting model supported by Bandura's SCT. The model was to explore if personal, behavioral and environmental factors predict U.S Army soldiers BMI and their self-efficacy. Prior researchers in psychology and/or disciplines have demonstrated that BMI has been associated with eating habits, activity level, willpower, poverty, gender, and cultural background (Fuemmeler et al., 2007; Gordijin, 2010; Hare et al., 2012; Neumann & Heng, 2011). This current study uses quantitative active duty personnel measured data to offer a unique view on possible factors leading to obesity and being overweight, including the role of self-efficacy. This chapter provides a thorough description of the population studied in this research and a detailed summary presentation of the results obtained in the analysis.

Participants

The sample size was 117 within a population of 130 Army Battalion soldiers in a battalion of 400 service members. The response rate for the instruments out of the target population was 90% (n=117); however, 25 submissions had missing item responses and/or were missing an instrument. It is important to note that only officers with prior enlisted service have ASVAB scores. There were a total of 94 participants who had complete data sets and were used for analysis. Given the nature of the study only those participants who had complete datasets were included in subsequent analyses. Table 5 provides a breakout of those providing study materials and who responded.

Table 5

Participant Demographic Breakout

Category	Administered		Returned		Complete	
	n	%	*n*	%	*n*	%
Officers	7	5	6	5	6	5
Enlisted	123	95	111	85	88	67
Male	115	88	104	82	84	64
Female	15	12	13	8	10	8
Total	130	100	117	90	94	72

Table 6 shows a breakdown of the completed by tools measured in this study. The LAI and the MLQ showing the most (88%) completed responses with 115 responses each out the 117 packets received. There was also 88% GSE feedback properly filled out but less participation (114) than the LAI and MLQ. 108 SMQ properly completed out of the 117 packets received.

Table 6

Instrument Participation Rate

Tools	Total		Returned		Complete	
	n	%	*n*	%	*n*	%
GSE	130	100	117	90	114	88
LAI	130	100	117	90	115	88
MLQ	130	100	117	90	115	88
SMQ	130	100	117	90	108	83

Table 7 shows that (108) 83% of the participants provided sufficient information to compute BMI. All data collected are archived and were verified on the participant's ERB. The table also shows that 82% of the soldiers gave their APFT and 78% had an ASVAB score. A total of 101 and 106 participants respectively had verifiable ASVAB

and APFT scores on their ERB. Table 7 gives a summary of data that was directly collected from participants not using assessment tools.

Table 7

Participant Archived Data Collected

Archived Records	Total		Returned		Complete	
	n	%	*n*	%	*n*	%
APFT Score	130	100	117	90	106	82
ASVAB Score	130	100	117	90	101	78
BMI (Derived)	130	100	117	90	108	83

Descriptive Statistics

Criterion Variables

The CDC (2000) BMI categories are Underweight = <18.5, Normal weight = 18.5–24.9, Overweight = 25–29.9, and Obesity = BMI of 30 or greater. The BMI frequencies reveal that 57.2 % (n=67%) are either considered overweight (48.7%) or obese (8.5%). GSE (Schwarzer & Jerusalem, 1995) defined if a person's self-efficacy was low (<30) or high (>30). GSE indicated that 81.2% (n=95) of the participants had high self-efficacy (see Table 8).

Table 8

Participant BMI and GSE Frequencies

		n	%
BMI	Healthy Weight	41	35.0
	Overweight	57	48.7
	Obese	10	8.5
	Missing	9	7.7
GSE	Low Self-efficacy	19	16.2
	High Self-efficacy	95	81.2
	Missing	3	2.6

Table 9 shows the average BMI is 25.694 with a standard deviation (SD) of 2.73, the average APFT score is 256.04 with a SD=34.462, the average ASVAB score was 104.71 with a SD=10.681, average GSE was 33.56 (high) with a SD=3.928.

Table 9

Participant BMI and GSE Descriptive Statistics

	n	Mean	*SD*
BMI	94	25.694	2.728
GSE	94	33.56	3.93

Predictor Variables

Multiple Leadership Questionnaires. Table 10 provides a breakdown of the MLQ data. The MLQ showed that 21.4% of the participants rate their leaders as predominantly using Transformational Leadership, 60.7% rate their immediate leaders as using Management by Exception leadership, and 16.2% rate their leaders as using Laisser-Faire leadership. Of these different styles, 84.6% of the participants rate their supervisor's leadership as being effective (41.9%), very effective (24.8%) or extremely effective (17.9%). The frequencies showing how satisfied the participants are with their supervisors' leadership reflect 51.3% satisfaction rate as fairly satisfied (36.8%) or very satisfied (14.5%). About 24.8% of the participants are somewhat dissatisfied (13.7%) or very dissatisfied (11.1%) and 19.7% were undecided or did not answer that question (4.3%). The MLQ indicates what leadership style is used, how effective participants thinks the style used is, and how satisfied the participants are with their leaders.

Table 10

Reported Leadership Style, Effectiveness, and Satisfaction Breakout

	Type	*n*	%
Style	Transformational	25	21.4
	Management by Exception	71	60.7
	Laissez-Faire	19	16.2
	Missing	2	1.7
Effectiveness	Not effective	2	1.7
	Only slightly effective	12	10.3
	Effective	49	41.9
	Very effective	29	24.8
	Extremely effective	21	17.9
	Missing	4	3.4
Satisfaction	Very dissatisfied	13	11.1
	Somewhat dissatisfied	16	13.7
	Neither satisfied nor dissatisfied	23	19.7
	Fairly satisfied	43	36.8
	Very satisfied	17	14.5
	Missing	5	4.3

Lifestyle Assessment Inventory. Participants completed the LAI to determine if their overall lifestyle was very healthy (23 -29), average healthy (17-22) or below 16 unhealthy lifestyles (Clark et al., 1991). The results are presented in Table 11.

Table 11

Participant Lifestyle Breakout

Lifestyle	*n*	%
Unhealthy	44	37.6
Average Healthy	48	41.0
Very Healthy	23	19.7
Missing	2	1.7

Stress Management Questionnaire. The SMQ subsections show most respondents had medium stress warning signs (60.7%), whereas only 14.5% had high and 16.2% had low. In addition, most participants (70%) were affected by medium (52.1%) to low (17.9%) stress effects. However, 56.4% were affected by medium (49.6%) to high (6.8%) stressors, whereas low stressors affected 35%. The SMQ results fall into three categories: Warning Signs, Stress Effect, and Stressors with three levels (see Table 12).

Table 12

Participant Stress Management Breakout

	Level	*n*	%
Warning Signs	Low	19	16.2
	Medium	71	60.7
	High	17	14.5
	Missing	10	8.5
Stress Effect	Low	21	17.9
	Medium	61	52.1
	High	25	21.4
	Missing	10	8.5
Stressors	Low	41	35.0
	Medium	58	49.6
	High	8	6.8
	Missing	10	8.5

Multiple Regression Assumptions

I tested the assumptions to conduct a regression analyses with the collected data. The first assumption was there should be at least 15 cases for each of the five predictors (n=75) (Mertler & Vannatta, 2010). There were 94 cases in the sample that met the minimum requirement (see Table 13). A check for collinearity among the predictors was determined there was no collinearity among them (r >.7) for all three regressions run.

Table 13

Case Processing Summary for Criterion and Predictor Variables

	Cases		Missing		Total	
	n	%	*n*	%	*n*	%
BMI	94	81	22	19	116	100
GSE	94	81	22	19	116	100
APFT	94	81	22	19	116	100
ASVAB	94	81	22	19	116	100
LAI	94	81	22	19	116	100
SMQ	94	81	22	19	116	100

A check for outliers in small samples is recommended, and the boxplot method was used (see Figure 2). After determining that these values were significantly different from the rest, Mertler and Vannatta (2010) suggested it is appropriate to drop outliers since they did not fall within these ranges, especially for studies with small sample sizes. Six outliers were deleted to produce the dataset for analysis.

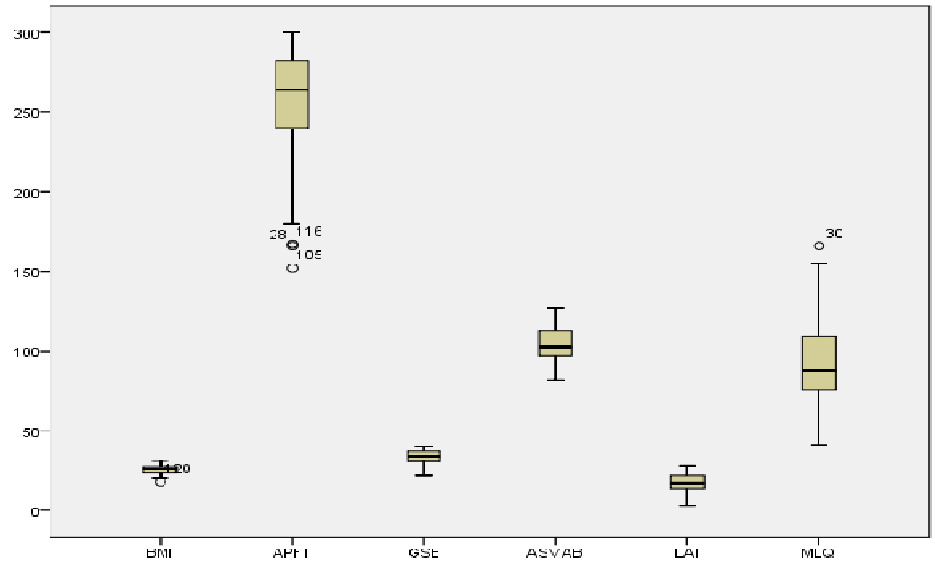

Figure 2. Boxplot for Criterion and Predictors Showing Outliers.

The boxplot for the criterion and predictor variables was rerun after all outliers

were extracted; the revised boxplot shows that the dataset used for subsequent analysis was free from outliers (see Figure 3).

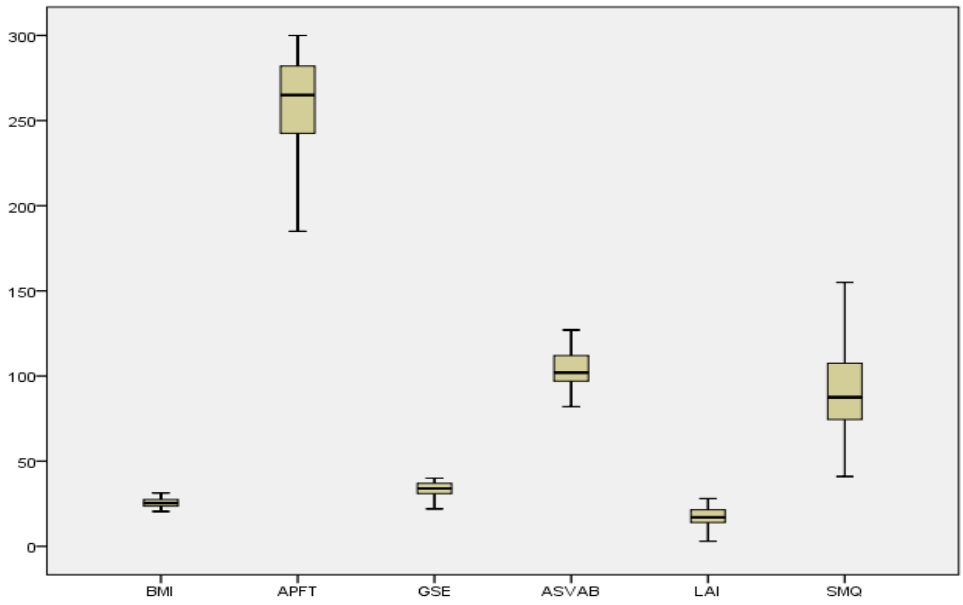

Figure 3. Boxplot for Criterion and Predictors without Outliers.

After removing six cases that were not within three standard deviations, 88 cases remained which still met the minimum requirement of at least 15 cases for each of the five predictors (see Table 14).

Table 14

Corrected Case Processing Summary for Criterion and Predictors Variables

	Cases		Missing		Total	
	n	%	*n*	%	*n*	%
BMI	88	75.9	28	24.1	116	100
GSE	88	75.9	28	24.1	116	100
APFT	88	75.9	28	24.1	116	100
ASVAB	88	75.9	28	24.1	116	100
LAI	88	75.9	28	24.1	116	100
SMQ	88	75.9	28	24.1	116	100

Other assumptions tested included: (a) Linearity of the relationship between criteria and predictor variables, (b) independence of the errors, (c) homoscedasticity of the errors, and (d) normality of the error distribution. The following sections cover them.

Linearity of the relationship between criteria and predictor variables. Figures 4, 5, and 6 suggest linearity in all three equations could be assumed; the scatter plot for each research question depicts outliers, but each set of variable outcomes fit within two lines confirming linearity. Linearity meaning that criteria variable and the predictor variables are related. Figure 4 shows that all variable outcomes fall within two imaginary parallel lines confirming linearity, meaning that an average or mean line could divide the plot into two even parts. Therefore there is a possibility that we can find an equation that draws that line. An imaginary line between 2 and -2.5 of the residual values accounts for all GSE and corresponding predictor variable values.

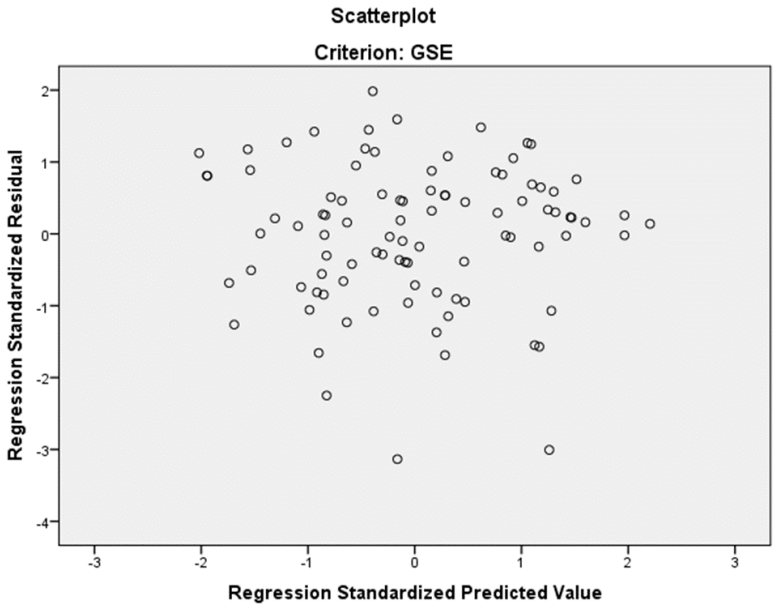

Figure 4. *Residual Scatterplot for GSE and Predictor Variables.*

Figure 5 shows that all variable outcomes fall between two imaginary parallel lines confirming linearity: meaning that an average or mean line could divide the plot into two even parts. Therefore there is a possibility that we can find an equation that draws that line. An imaginary line between 2 and -2 of the residual values account for BMI and the predictor variables.

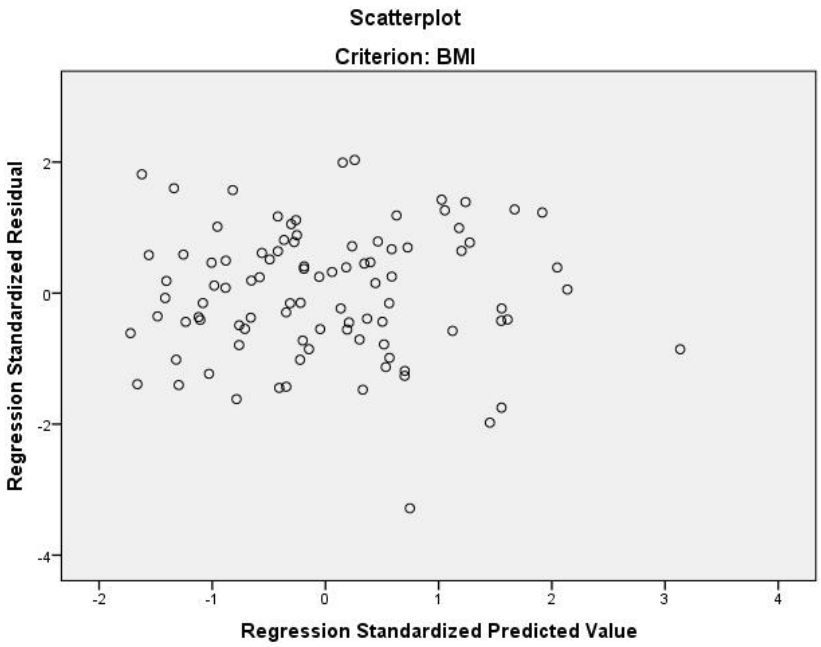

Figure 5. Residual Scatterplot for BMI and Predictors Values.

Figure 6 shows that all variable outcomes fall between two imaginary parallel lines line confirming linearity: meaning that an average or mean line could divide the plot into two even parts. Therefore there is a possibility that we can find an equation that draws that line. An imaginary line between 2 and -2 of the residual values account for all variable of BMI as predicted by GSE.

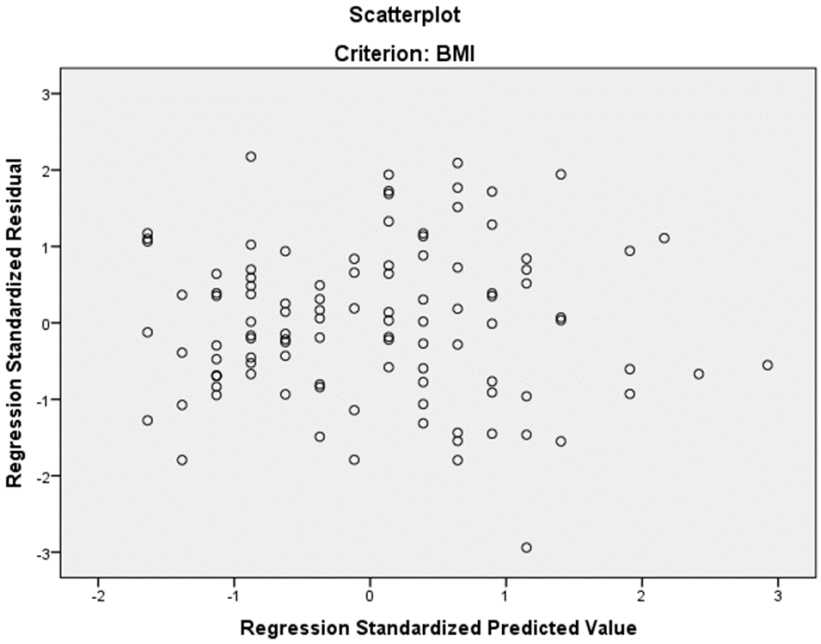

Figure 6. Residual Scatterplot for BMI and GSE.

The three probability charts of the standardized residuals presented in Figures 7, 8, and 9, each suggests that the distributions are normally distributed. Figure 7 is a probability plot showing that the BMI model for GSE and predictor variables follow an increasing linear trend. Mostly suggesting that the residuals have constant variable. The variable is not within unexplained distances of the normal model. The curve could have been wavy, trendy but this is linear in this case. In addition, the skewness test results and SE of skewness were (BMI=336, SE .234; APF=-.994, SE=.239; GSE=-.384, SE=.226; ASVAB=.228, SE=.240; LAI=-.266, SE=.266; SMQ=.344, SE=.235; MLQ=-.844, SE=226) and kurtosis tests results and SE of kurtosis were (BMI=-.260, SE=.463; APF=1.271, SE=.474; GSE=-.311, SE=.449, ASVAB=-.547, SE=.476; LAI=-.078, SE=.447; SMQ=-.317, SE=.465; MLQ=1.543, SE=.447) showing that the corrected data set criterion and predictor variable have their skewness less than plus and minus one

which is within normal range, and that all kurtosis scores were less than three time the SE of the Kurtosis. Confirming that the data used is normally distributed.

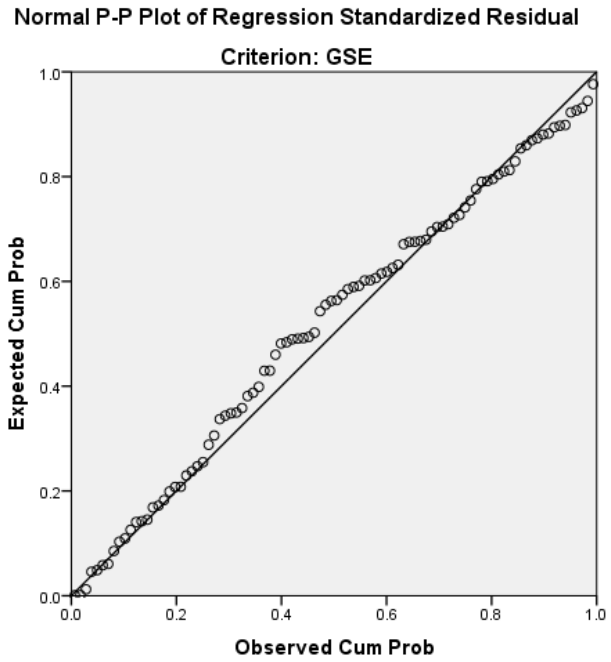

Figure 7. GSE Normal Probability Plot with all Predictor Variables.

Figure 8 is a probability plot showing that the BMI model for BMI and predictor variables follow an increasing linear trend. Mostly suggesting that the residuals have constant variable. All plots fall close to the straight line making the assumption of normality plausible (Mertler & Vannatta, 2010). The center diagonal line being normality there is no major deviation from normality that means. In addition, the skewness test results were (BMI=336, SE=.234; APFT=-.994, SE=.239; GSE=-.384, SE=.226; ASVAB=.228, SE=.240; LAI=-.266, SE=.266; SMQ=.344, SE=.235; MLQ= -.844, SE=226) and kurtosis tests results were (BMI=-.260, SE=.463; APFT=1.271, SE=.474; GSE=-.311, SE=.449, ASVAB=-.547, SE=.476; LAI=-.078, SE=.447; SMQ=-.317,

SE=.465; MLQ=1.543, SE=.447) showing that the corrected data set criterion and predictor variable have their skewness less than plus and minus one which is within normal range, and that all kurtosis scores were less than three time the SE of the Kurtosis. Confirming that the data used is normally distributed.

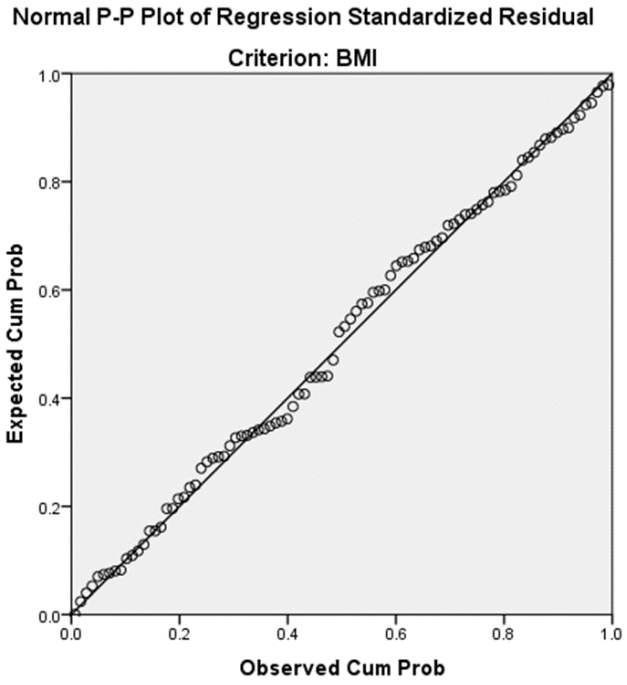

Figure 8. BMI Normal Probability Plot with all Predictor Variables.

Figure 9 is a probability plot showing that the BMI determining model for BMI and GSE follows an increasing linear trend. The linear trend suggests the residuals have constant variability. The residuals are more likely to follow the model trend. All plots fall close to the straight line making the assumption of normality reasonable (Mertler & Vannatta, 2010). The center diagonal line being normality there is no major deviation from normality that means. In addition, the skewness test results were (BMI=.336, SE=.234; APFT=-.994, SE=.239; GSE=-.384, SE=.226; ASVAB=.228, SE=.240; LAI=-

.266, SE=.266; SMQ=.344, SE=.235; MLQ=-.844, SE=226) and kurtosis tests results were (BMI=-.260, SE=.463; APFT=1.271, SE=.474; GSE=-.311, SE=.449, ASVAB=-.547, SE=.476; LAI=-.078, SE=.447; SMQ=-.317, SE=.465; MLQ=1.543, SE=.447) showing that the corrected data set criterion and predictor variable have their skewness less than plus and minus one which is within normal range, and that all kurtosis scores were less than three time the SE of the Kurtosis. Confirming that the data used is normally distributed.

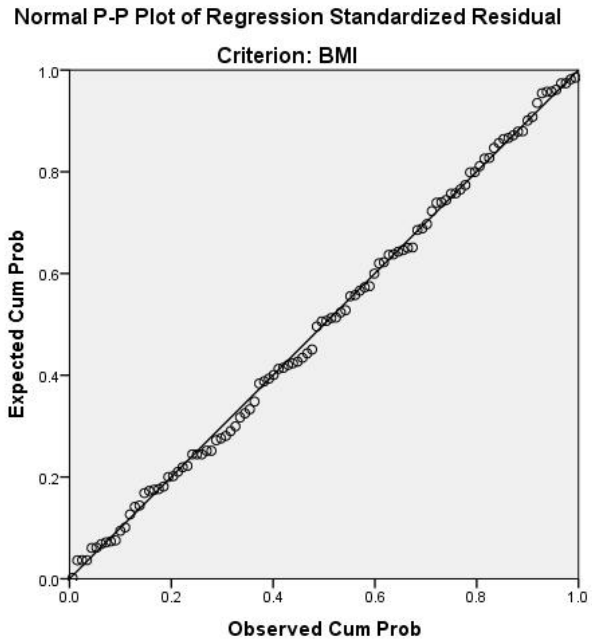

Figure 9. BMI Normal Probability Plot with GSE.

Independence of the errors (no serial correlation). The residuals do not suggest any serial relations for all three equations. The Pearson correlation for all criterion and predictor variables was $r<.7$ indicates that no one predictor can overpower any other to make the model insignificant (see Figures 4, 5, 6 and 7, 8, 9 above).

Homoscedasticity (constant variance) of the errors. If the variance was not constant the probability plot PP plots (used above) would have shown a serial or any other trend, neither the scatterplots nor the probability trend suggest any abnormal trend. Levene's Homogeneity test shows that all the predictor variables have equal variance $p>0.05$ except ASVAB scores ($p<.008$) and SMQ ($p=.05$) (see Table 15). The results show there is a slightly higher chance of incorrectly rejecting the null hypothesis using the ASVAB and SMQ.

Table 15

Levene's Homogeneity of Variance Test

	Levene Statistic	*df1*	*df2*	*Sig.*
APFT	2.098	2	99	.128
ASVAB	5.070	2	98	.008
LAI	.098	2	104	.907
SMQ	3.092	2	99	.050
MLQ1	.076	2	104	.927

Normality of the error distribution. The Normality probability plot (PP plot) as well as the Quintile Quintile test computed for all three regressions suggests normality and possibly constant variance. The relationship between the variables is linear (Figures 2, 3, and 4), the residual valued are independent, the variance of the residuals are constants (or can be predicted between the two lines), and the values of the residuals are normally distributed. In addition a skewness and kurtosis tests show that the corrected data set criterion and predictor variable have their skewness less than plus and minus one which is within normal range, and that all kurtosis scores were less than three time the SE of the Kurtosis. Confirming that the data used is normally distributed.

Correlation Analysis

Descriptive statistics for criteria GSE, and predictor variables APFT, ASVAB, LAI, SMQ, and MLQ are presented in Table 16.

Table 16

Descriptive Statistics for GSE and Predictors

Tools	n	M	SD
GSE	88	33.76	3.901
APFT	88	261.63	27.572
ASVAB	88	104.49	10.425
LAI	88	17.36	5.031
SMQ	88	90.08	26.563
MLQ	88	1.95	.619

Pearson correlations were run for GSE and the predictors. GSE correlates with ASVAB $r_{(88)}$=.182, p<0.045 (1-tailed), with LAI $r_{(88)}$=.445, p<0.001 (1-tailed), and inversely correlates with SMQ $r_{(88)}$=-.341, p<0.001 (1-tailed). SMQ inversely correlates with LAI $r_{(88)}$=-.413 p<.0001 (1-tailed) and positively correlates with MLQ $r_{(88)}$=.241, p<.012 (1-tailed). All other correlations were not significant (see Table 17).

Table 17

GSE and Predictor Variables Correlational Analysis

	GSE	*APFT*	*ASVAB*	*LAI*	*SMQ*	*MLQ*
GSE	1	0.02	*0.182	**0.445	**-0.341	-0.085
APFT	0.02	1	0.011	0.083	0.107	-0.076
ASVAB	*0.182	0.011	1	0.114	0.115	0.055
LAI	**0.445	0.083	0.114	1	**-0.413	-0.085
SMQ	**-0.341	0.107	0.115	**-0.413	1	**0.241
MLQ	-0.085	-0.076	0.055	-0.085	**0.241	1

Note. *p < 0.05
**p < 0.01

Descriptive statistics for BMI, APFT, ASVAB, LAI, SMQ, and MLQ are presented in Table 18.

Table 18

Descriptive Statistics for BMI and Predictors

	N	*M*	*SD*
BMI	87	25.656	2.6473
APFT	87	261.84	27.658
ASVAB	87	104.49	10.486
LAI	87	17.41	5.038
SMQ	87	89.98	26.699
MLQ	87	1.94	.598

Pearson correlations were run on BMI and the predictors. Table 19 shows that BMI is significantly negatively correlated with both APFT $r_{(87)}$=-.218, p<0.021 (1-tailed) and LAI $r_{(87)}$=-0.225, p=.018 (1-tailed). All other correlations with BMI are considered insignificant. Other results shown in this table is that SMQ was inversely correlates significantly with LAI $r_{(87)}$=-.411, p<.0001, (1-tailed) and positively correlates with MLQ $r_{(87)}$=.240, p<.012 (1- tailed). All other correlations were not found significant (see Table 19).

Table 19

BMI and Predictor Correlation

		BMI	*APFT*	*ASVAB*	*LAI*	*SMQ*	*MLQ*
Pearson Correlation	BMI	1	*-.218	.120	*-.225	.076	-.136
	APFT	*-.218	1	.011	.077	.110	-.075
	ASVAB	.120	.011	1	.114	.115	.055
	LAI	*-.225	.077	.114	1	**-.411	-.085
	SMQ	.076	.110	.115	**-.411	1	*.240
	MLQ	-.136	-.075	.055	-.085	*.240	1

Note: *p < 0.05
**p < 0.01

Multiple Regression Analysis

The main focus in this chapter is the analysis of the data collected from the participants in response to the questionnaires to address three main research questions. The following sections cover the analyses for each research question where a multiple regression analysis is computed and the analysis consist sequentially of descriptive statistics, correlation, regression model summary, an ANOVA, a coefficient output, as well a post hoc analysis if the regression analysis is proven to be statistically significant.

Research Question 1

The first research question was: *Do Personal (intellectual capabilities and physical fitness), Behavioral (lifestyle and stress management), and/or Environmental (supervisor leadership) factors predict Self-efficacy among active duty Army personnel?* The null hypothesis and the alternative hypothesis were as follows:

H_{01}: Personal (ASVAB and APFT), Behavioral (LAI and SMQ), and/or Environmental (MLQ) factors do not predict Self-efficacy (GSE) among active duty Army personnel.

H_{A1}: Personal (ASVAB and APFT), Behavioral (LAI and SMQ), and/or Environmental (MLQ) factors predict Self-efficacy (GSE) among active duty Army personnel.

A multiple regression analysis was run with GSE as the criterion with the Determination Model variables: MLQ, LAI, ASVAB, APFT, and SMQ as predictors. A multiple regression analysis using Enter method was used (see Table 20) to determine if any Determination Model variables predicted the criterion (Mertler & Vannatta, 2010), yielded a statistically significant result. The Enter method allows all predictors to be entered simultaneously and weight the coefficient of how much each predictor contributes in estimating a criterion (Bruin, 2006).

Table 20

GSE and Predictors Variables Entered/Removed[a]

Model	*Variables Entered*	*Variables Removed*	*Method*
1	MLQ, LAI, ASVAB, APFT, SMQ[b]		Enter

Note: a. Criterion: GSE

b. All requested variables entered.

Table 21 shows that the regression model was a good fit in predicting GSE. Therefore warranting rejection of the null hypothesis and confirming the alternative hypothesis that Personal, Behavioral, and Environmental factors predict Self-efficacy among active duty Army personnel. The analysis suggests that using this model, 25.6% of Self-efficacy is accounted by the predictor variables used in this study. R^2=.256,

$F_{(5,82)}$=5.645, p < .0001, suggesting that the overall model is statistically significant and suggest the rejection of the null hypothesis and confirmation of the alternative hypothesis that Personal, Behavioral and Environmental factors predict Self-efficacy using the Determination Model. Further, analyses were done to explore this conclusion. At least 25.6% (R^2) of GSE is predicted by LAI (see Table 21).

Table 21

GSE and Predictor Variables Model Summary

Model	*R*	*R^2*	*Adj.R^2*	*SE*	*R^2Chg*	*F Chg*	*df1*	*df2*	*Sig F Chg*
1	.506[a]	.256	.211	4.466	.256	5.645	5	82	.000

Note: a. Criterion: GSE

The ANOVA analysis shown in Table 22 supports the previous findings and confirms R^2=.256, $F_{(5,82)}$=5.645, p<.0001 suggesting the regression is significant.

Table 22

GSE and Predictor Variables ANOVA[a]

Model		*SS*	*df*	*MS*	*F*	*Sig*
1	Regression	339.035	5	67.807	5.645	.000[b]
	Residual	984.954	82	12.012		
	Total	1323.989	87			

Note: a. Criterion: GSE

b. Predictors: (Constant), MLQ, ASVAB, APFT, LAI, SMQ

The model coefficient outputs shown in Table 23 depict each Determination Model variable accounted for in estimating Self-efficacy. The coefficient output showed that Lifestyle significantly predicted Self-efficacy in this model with $t_{(88)}$=3.095, p =0.003, and Stress Management is a negative significant predictor of Self-efficacy $t_{(88)}$=

-2.005, p=0.048, whereas the remaining Determination Model variables were found not to contribute significantly to predicting Self-efficacy.

The resulting regression model is:

Y1=25.2 + 0.258*Lifestyle – 0.033* Stress Management

Table 23

GSE and BMI Predictor Model Coefficients[a]

Model		*B*	*SD*	*Beta*	*t*	*sig*	*0-order*	*Partial*	*Part*	*Tolerance*	*VIF*
1	(Constant)	25.207	5.342		4.718	.000					
	APFT	.002	.014	.013	.137	.891	.020	.015	.013	.957	1.045
	ASVAB	.064	.036	.171	1.750	.084	.182	.190	.167	.954	1.048
	LAI	.258	.083	.332	3.095	.003	.445	.323	.295	.786	1.271
	SMQ	-.033	.016	-.222	-2.005	.048	-.341	-.216	-.191	.741	1.350
	MLQ	-.078	.648	-.012	-.120	.905	-.085	-.013	-.011	.930	1.075

Note: a. Criterion: GSE

Post Hoc Tests

A post hoc test was conducted for GSE and LAI because LAI was the only significant predictor variable with subscale used in this analysis (Mertler & Vannatta, 2010). The main point is if the mean of each subscale acts differently or the same while predicting GSE. A mean comparison and Scheffe test were conducted because of unequal group sizes with assumed equal variances (Creswell, 2009). The test revealed that very healthy lifestyle and unhealthy lifestyle have means that significantly differ $F_{(2,100)}$= 5.144, p=.007 (see Table 24). Average healthy means does not significantly differ from the other two groups. A Levene test confirms that we have equal variances between means (p=.129). The Scheffe test suggests that all three means significantly differ and that a type I error is not likely. Therefore I can confirm that the finding is solid and that LAI (t_{88}=3.095 p=0.003) significantly predict GSE with power level P=.816. This

confirms the previous decision to reject the null hypothesis and conclude that Lifestyle significantly predicted Self-efficacy (see Table 24).

Table 24

GSE and LAI Post Hoc Analysis

	SS	*df*	*MS*	*F*	*Sig.*	*Partial Eta*^{2}	*Noncent. Parameter*	*Obs. Power*[a]
Contrast	157.904	2	78.952	5.144	.007	.086	10.289	.816
Error	1688.220	110	15.347					

Note. The F tests the effect of Lifestyle based on the linear independent pairwise comparisons among the estimated marginal means.

Table 25 shows very healthy and unhealthy lifestyles have significantly different means while predicting Self-efficacy (GSE). The average healthy lifestyle mean does not significantly differ from the other two groups (see Table 25). This suggests the results are valid, regardless of the sample and means.

Table 25

Scheffe GSE and LAI Pairwise Mean Analysis

					95% CI	
(I) Lifestyle Level		*Mean Difference (I-J)*	*SE*	*Sig.*	*Lower Bound*	*Upper Bound*
Unhealthy Lifestyle	Average Healthy	-1.02	.827	.470	-3.07	1.03
	Very Healthy	*-3.24	1.012	.007	-5.75	-.73
Average Healthy	Unhealthy Lifestyle	1.02	.827	.470	-1.03	3.07
	Very Healthy	-2.22	.997	.088	-4.70	.25
Very Healthy	Unhealthy Lifestyle	*3.24	1.012	.007	.73	5.75
	Average Healthy	2.22	.997	.088	-.25	4.70

Note: *.The mean difference is significant at the .05 level.

Research Question 2

The second research question was: *Do Personal (intellectual capabilities and physical fitness), Behavioral (lifestyle and stress management), and/or Environmental (supervisor leadership) predict BMI among active duty Army personnel?* The null and alternative hypothesis were as follows:

H_{02}: Personal (ASVAB and APFT), Behavioral (LAI and SMQ), and/or Environmental (MLQ) factors do not predict BMI among active duty Army personnel.

H_{A2}: Personal (ASVAB and APFT), Behavioral (LAI and SMQ), and/or Environmental (MLQ) factors predict BMI among active duty Army personnel.

A multiple regression analysis was run with BMI as the criterion with the Determination Model variables: MLQ, LAI, ASVAB, APFT, and SMQ as predictor variables. A multiple regression Enter method (see Table 26) was used to determine which variables significantly predict the criterion (Mertler & Vannatta, 2010). It allows all predictors to be entered simultaneously and weight the coefficient of how much each predictor contributes in estimating a criterion (Bruin, 2006).

Table 26

BMI and Predictors Variables Entered/Removed[a]

Model	*Variables Entered*	*Variables Removed*	*Method*
1	MLQ LAI ASVAB, APFT, SMQ[b]		Enter

Note: a. Criterion: BMI

b. Predictors: All requested variables entered.

Table 27 is a computation of the Determination Model between BMI and assumed predictor variables. It shows that only 14.6% of BMI is explained by the model. The results show that the model used here is a good fit in predicting BMI: R^2=.416, $F_{(5, 81)}$=2.765, p<.023 (alpha = .05).

Table 27

BMI and Predictor Model Summary[a]

Model	*R*	R^2	*Adj.* R^2	*SE.*	R^2*Chg*	*F Chg*	*df1*	*df2*	*Sig. F Chg*
1	.382[b]	.146	.093	2.5211	.146	2.765	5	81	.023

Note: a. Criterion: BMI
b. Predictors: (Constant), MLQ, ASVAB, APFT, LAI, SMQ

Table 28 Analysis of the variances results confirms the results showing that the model used here is a good fit in predicting BMI: R^2=.416, $F_{(5, 81)}$=2.765, p<.023 (alpha = .05). Warranting the rejection of the null hypothesis and the conclusion that the predictor variables are fit to predict BMI in this model (see Table 28). At least 41.6% of BMI is explained by the predictors used in this model.

Table 28

BMI and BMI Predictors Variables ANOVA[a]

Model		*SS*	*df*	*MS*	*F*	*Sig.*
1	Regression	87.876	5	17.575	2.765	.023[b]
	Residual	514.838	81	6.356		
	Total	602.714	86			

Note: a. Criterion: BMI
b. Predictors: (Constant), MLQ, ASVAB, APFT, LAI, SMQ

Table 29 is the summary of the coefficients using BMI as a criterion. The summary shows that APFT and LAI are significant negative predictors of BMI. The

coefficient output showed that: (a) APFT is a predictor of BMI in this model with $t_{(87)}$= -2.092 p=.04, which suggests that higher APFT scores predict lower BMI. (b) LAI is also a good predictor of BMI in the model with $t_{(88)}$=-1.973, p=0.05, which suggest that healthier lifestyle more likely to predict lower BMI. The remaining Determination Model variables were found not to contribute significantly to predicting BMI. The resulting regression model was:

Y2=30.49 - 0.021* Physical Fitness – 0.120* Lifestyle

Table 29

BMI and BMI Predictors Variable Coefficients[a]

	Model	*B*	*SE*	*Beta*	*t*	*Sig*	*0-order*	*Partial*	*Part*	*Tolerance*	*VIF*
1	(Constant)	30.495	3.895		7.829	.000					
	APFT	-.021	.010	-.220	-2.092	.040	-.218	-.226	-.215	.958	1.044
	ASVAB	.039	.027	.154	1.469	.146	.120	.161	.151	.954	1.048
	LAI	-.120	.061	-.228	-1.973	.052	-.225	-.214	-.203	.789	1.268
	SMQ	.003	.012	.033	.279	.781	.076	.031	.029	.741	1.349
	MLQ	-.835	.472	-.188	-1.770	.081	-.136	-.193	-.182	.930	1.075

Post Hoc Tests

A post hoc test was conducted for BMI and LAI because LAI was the only significant predictor variable with subscale used in this regression (Mertler & Vannatta, 2010). The main point is if the mean of each subscale acts differently or the same while predicting BMI. A mean comparison and Scheffe test were conducted because we have unequal group sizes and assume equal variances (Creswell, 2009). The F test suggests that very healthy lifestyle, average lifestyle, and unhealthy lifestyle have means that do not significantly differ while predicting BMI: $F_{(2,104)}$=2.865 p=.062 (see Table 30). This test is based on the linearly independent pairwise comparisons among estimated means.

Table 30

Scheffe BMI and LAI Pairwise Mean Analysis

	SS	*df*	*MS*	*F*	*Sig.*	*Partial Eta*^{2}	*Noncent. Parameter*	*Observed Power*[a]
Contrast	2.194	2	1.097	2.865	.062	.052	5.730	.550
Error	39.825	104	.383					

Note: a. Computed using alpha = .05

Average healthy means does not significantly differ from the other two groups (see Table 31). The Scheffe test suggests that all three means significantly differ and that a type I error is not likely. However the effect power level is fairly moderate *P*=.55 and the overall significance of mean difference was not statically significant. Which suggested that a type II error is likely. A Levene test confirms that we have equal variances between means (*P*=.678). Therefore we can conclude that even though the finding confirmed that LAI significantly predict BMI power level *P*=.55 (moderate significant) and the mean difference being non-significant both warrant a failure to reject the null hypothesis and state there is sufficient data to conclude that LAI significantly predicts BMI. APFT is the only statically significant predictor of BMI.

Table 31

BMI and LAI Pairwise Comparison

(I) Lifestyle Level		*M Diff. (I-J)*	*Std. Error*	*Sig.*[b]	*95% CI. for Diff.*[b] *Lower Bound*	*Upper Bound*
Unhealthy Lifestyle	Average Healthy	.245	.133	.070	-.020	.509
	Very Healthy	.357*	.165	.033	.029	.685
Average Healthy	Unhealthy Lifestyle	-.245	.133	.070	-.509	.020
	Very Healthy	.113	.164	.494	-.213	.438
Very Healthy	Unhealthy Lifestyle	-.357*	.165	.033	-.685	-.029
	Average Healthy	-.113	.164	.494	-.438	.213

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Least Significant Difference (equivalent to no adjustments).

Research Question 3

The third research question was: *Is Self efficacy associated with BMI among active duty Army personnel?* The null and the alternative hypothesis were as follows:

H_{03}: Self-efficacy (GSE) is not associated with BMI among active duty Army personnel.

H_{A3}: Self-efficacy (GSE) is associated with BMI among active duty Army personnel. The sample (n=105) mean for Self-Efficacy was 33.58 (SD=3.94) and the mean BMI was 25.769 (SD=2.67). The correlational analysis of BMI and GSE do not have a significant association. The correlation between GSE and BMI is r=-.091 (df =103, p<.178, 1-tailed), which failed to reject the null hypothesis that there was no inverse relationship between

GSE and BMI among active duty Army personnel. To test the Determination Model a regression analysis was conducted.

Table 32 and 33 confirm that GSE does not predict BMI. Less than .08% of BMI is predicted by GSE, and that result is not statistically significant p=.356. Table 32 and 33 show that using Enter method, 03% of BMI is explained by self-efficacy. The BMI determining model was not a good fit in proving that BMI can be predicted by Self-efficacy $F_{(1,104)}$=.313, =.577.

Table 32

BMI and GSE Model Summary[a]

Model	*R*	R^2	*Adj.*R^2	*SE*	R^2*Chg*	*F Chg*	*df1*	*df2*	*Sig. F Chg*
1	.091[b]	.008	-.001	2.6693	.008	.860	1	103	.356

Note: a. Criterion: BMI
b. Predictors: (Constant), GSE

Table 33 Suggests that the Determination model is not a good fit in predicting BMI with GSE as a predictor. $F_{(1,104)}$=0.860, p=.356. We fail to reject the null hypothesis and conclude Self-efficacy is not associated with BMI among Army personnel.

Table 33

BMI and GSE ANOVA[a]

Model		*SS*	*df*	*MS*	*F*	*Sig.*
1	Regression	6.126	1	6.126	.860	.356[b]
	Residual	733.880	103	7.125		
	Total	740.006	104			

Note. a. Criterion: BMI
b. Predictors: (Constant), GSE

Summary and Transition

From the demographic data, I confirmed prior findings that there is an overweight problem among active duty Army soldiers and that certain Personal and Behavioral factors are significant predictors of Self-efficacy and BMI. The frequencies showed that (a) the majority of soldiers 57.2 % are either considered overweight (48.7%) or obese (8.5%), (b) an overwhelming number of participant 84.6% rate their supervisor's leadership as being effective (41.9%), very effective (24.8%) or extremely effective (17.9%), (c) about 51.3% of soldiers are satisfied: fairly satisfied (36.8%) or very satisfied (14.5%) with their supervisor's leadership style, (d) approximately 37% of respondent as living an unhealthy lifestyle and 60.7% as living an average healthy lifestyle (41%) or a very healthy lifestyle (19.7%), (e) a majority of soldiers live under medium to high stress levels, and (f) 81.2% of soldiers rate themselves as having high GSE. Aside from the demographic, significant correlations were found: (a) there is a significant negative correlation between GSE and SMQ and a significant positive correlation between GSE, ASVAB, and LAI, (b) BMI negatively correlates with LAI and APFT, (c) there was a significant positive correlation between SMQ and MLQ, and (d) the actual research results explored in this analysis confirmed hypothesis 1.

A multiple regression analysis using Enter method was used to determine which BMI model variables significantly predicted the criterion variable (Mertler & Vannatta, 2010), yielding a statistically significant result (see Table 15). The Enter method allows all predictor variables to be entered simultaneously and weight the coefficient of how much each predictor contributes in predicting a criterion variable (Bruin, 2006). The

Behavioral factor of Lifestyle significantly predicted Self-efficacy among Army personnel. Self-efficacy is a function of Lifestyle and Stress management level: R^2=.256, $F_{(5, 82)}$=5.645, p<.0001.

Y1 = 25.2 + 0.258*Lifestyle Level – 0.033* Stress Management

An Enter regression was used to determine if any BMI Determination model variables significantly predicted the criterion variable of BMI (Mertler & Vannatta, 2010), yielding a statistically insignificant result. Even though the analysis strongly suggests that BMI is function of physical fitness and lifestyle, the effect power fail to confirm the significance the relationship suggestion more data could be used to explore this hypothesis. The model initially showed significant results BMI: R^2=.416, $F_{(5, 81)}$=2.765, p<.023 (alpha = .05).

Y2 = 30.49 - 0.021* Physical Fitness – 0.120* Lifestyle.

However the model failed to confirm post hoc test that LAI was a significant predictor of BMI therefore APFT was the significant predictor for BMI, the equation becomes:

Y2 = 30.49 - 0.021* Physical Fitness.

An Enter regression was used to determine if GSE significantly predicted the criterion variable of BMI (Mertler & Vannatta, 2010), yielding a statistically insignificant result. The model failed to reject the null hypothesis and confirm the alternative hypothesis. A correlational analysis failed to demonstrate there was a significant relationship between Self-efficacy and BMI among Army personnel.

The main goal in this study was to explore a theory and a model as well as test three hypotheses. All five tasks were satisfactorily completed. In chapter 4, three multiple

regression analyses were run to test if GSE and BMI are functions of personal, behavioral and environmental factors. Research Question 1 proved that Self Efficacy is a function of the Behavior factors of Lifestyle and Stress Management. Research Question 2 showed that BMI is a function of the Personal factor of Physical fitness and Behavioral factor of Lifestyle. However a post hoc test fail to prove the significance of the statistical power or effect size for Lifestyle. Research Question 3 failed to show that there was a significant relationship between Self-efficacy and BMI. In Chapter 5, my main focus is to explore the results and interpret them. Chapter 5 is a discussion on the validity or limitations of this study while suggesting recommendations. Finally, I speak about the social implications of the study, the gap in the literature, the prior findings that this study confirms and summarize the chapter.

Chapter 5: Discussion, Conclusions, and Recommendations

The study was conducted because of limited research has been done on soldiers and their having weight related issues. This chapter provides an interpretation of the findings. In it I explore the limitations of the study, talk about the recommendations, and explore the implications of the research in society. The implication section discusses the validity of the method and the quality of the study as a tool for social change. The chapter concludes the research with suggestions in the areas in which future research need to focus on as well as how weight can be dealt with in the Army.

Interpretation of the Findings

The frequencies and descriptive statistics alone confirm the main reason for this research that overweight and obesity is an issue among Army personnel. The main suggestions: (a) BMI indicated the majority of soldiers 57.2 % are either considered overweight (48.7%) or obese (8.5%). However being overweight or obese doesn't necessarily mean that they won't meet tape (Army standard) because that would depend on each individual neck size, hips and/or waist size. It does however mean that 57.2 % are outside of healthy weight standards and could a health hazard now or for the Veteran Affaires later; (b) Supervisor leadership: an overwhelming number of participant 84.6% rate their supervisor's leadership as being effective (41.9%), very effective (24.8%) or extremely effective (17.9%), and about 51.3% of soldiers are satisfied: fairly satisfied (36.8%) or very satisfied (14.5%) with their supervisor's leadership. Which means that 49% are not even though they still may approve it is effective. Supervisor leadership and Stress management correlated significantly in table 24 with p=0.12. This could suggest

how the soldiers perceive their leaders could have an impact on their stress level; (c) Supervisor leadership vs Stress management could be another research topic worth exploring especially in work place environments where stress level is high; (d) Lifestyle showed 37% of respondent as living an unhealthy lifestyle and 60.7% as living an average healthy lifestyle (41%) or a very healthy lifestyle (19.7%). It not only strongly correlates with BMI and Self-efficacy, but also could be a strong predictor of both. A simple assessment of soldiers by their leaders or coach could give a strong picture of where that soldier stand and where they could improve or need improvements; and (e) the majority of soldiers live under medium to high stress levels. This could have an impact on ones self-efficacy, confidence or self-esteem, and mental health in short or long term

Aside from the demographics, significant correlations were also found: (a) there is a negative correlation between Self-efficacy and Stress management and a significant positive correlation between Self-efficacy, Intellectual capabilities, and Lifestyle. This suggests that low stress level associates with high self-efficacy and that healthier lifestyle and high intellectual capacity associate with high Self-efficacy, and (b) BMI negatively correlates with Lifestyle and Physical fitness. This could mean that high Physical fitness and Lifestyle associate with lower BMI. Also Stress management significantly correlated with Supervisor leadership. These correlations in a way suggest that the BMI predicting model could still be viable in a wider set of dataset. All variables used here associate with at least one other variable in the model.

All the hypotheses that were considered in this study return results that confirmed and/or refuted the research questions hypothesis. The Determination Model has shown in

Research Question 1 that the Behavioral Factors lifestyle, and stress management are good predictors of self-efficacy. Research Question 1 proved that Self-efficacy is a function of the Behavioral factors Lifestyle and Stress Management. This means that healthier lifestyle predicts high self-efficacy and that low stress predicts high BMI. Research Question 2 showed that BMI is a function of the Personal factor of Physical fitness and Behavioral factor of Lifestyle. However a post hoc test fail to prove the significance of the statistical power or effect size to confirm that Lifestyle predicts BMI. Nonetheless this research not only showed there were significant correlations among all BMI predictor variables, but that Personal (APFT) and Behavioral factors (LAI) significantly predict BMI. More data, more research focus in this area could clarify these results. Research Question 3 failed to show that there was a significant relationship between Self-efficacy and BMI, however it still showed an insignificant negative correlation between the variables.

We have just enough evidence to conclude that Personal, Behavioral and Environmental factors associate with Self-efficacy, and BMI and that Self-efficacy is strongly associated with BMI. Only partial components of the Personal factors (APFT) and behavioral factors (LAI and SMQ) where respectively significant predictors of BMI and Self-efficacy. This suggests however that emphasis should be put on Physical fitness, Stress Management level as well as Lifestyle. Having soldiers self-assess their own lifestyle choices, and tools could be to improve their Self-efficacy, however the research as structured failed to strongly confirm one of its main assumption that Personal, Behavioral and Environmental factors are good predictors of Self-efficacy or BMI.

Partial confirmation of the results yield to possible stronger results in bigger samples. The results are considered valid seen that all data collected were measured and that the tools used has been used and are scientifically been proven as reliable or valid. However a wider sample size could make better debatable conclusions.

Limitations of the Study

The participants in this study belong to only one Engineer Army Battalion. Stronger outcomes could have resulted in an Army-wide study or an engineer branch wide study. Also there were a lot of missing data or outliers and a wider study that takes into account many more factors could be looked at, gender, ethnicity and sub items of physical fitness test results could be looked at. Shorter questionnaire could probably help solve some of the unanswered responses. Other concerns brought up during orals include: (a) literature presented in Chapter 1 and Chapter 2 regarding the military's focus on service members maintaining physical fitness and weight standards has not been constant, and it could be argued that it has fluctuated in peace time vs being on a wartime footing, especially with respective emphasis on force structure reductions vs retention to meet manning requirements (e.g., stopgap); (b) current physical fitness standards concerning weight requirements and body fat estimates based on height and weight tables and body taping may not be normed effectively based on gender and ethnicity and may not be as accurate as alternative means; and (c) does current fitness estimate predict job performance based on military occupational specialty and/or the notion that every member of a given service must perform some core duty (e.g., “every soldier and infantryman")?

Recommendations

Any force, including the Army, needs strong and sometimes muscle-strong soldiers to carry others for long distances and long period of time. While an all minimally marginal BMI force is not recommended, the military could adopt much more social psychological approach, while keeping focus on physical fitness, like using a modified version of the Determination Model to help maintain healthier lifestyle, healthier lighter soldiers for a more efficient and good appearing work force. Army leaders can put more focus on a comprehensive solution to the overweight and obesity issues and less on sending these trained soldiers back to the civilian job market in times with no imminent wars. More studied need to be done in this scope studied here; more data can be collected to explore more variables for stronger results. A more comprehensive study using medical data or data measured by the researcher could give stronger and more precise results in confirming or refuting the hypotheses used here. Even though the data used here is consider measured and measured, I am inclined to believe that if this research was done by one team administrating APFT and measuring the participants height and weight using the same scales the result could have been different and probably more accurate.

Implications of Social Change

This research just through the data collection and frequencies showed that 57.2% of active duty soldiers are either considered overweight (48.7%) or obese (8.5%) using the BMI standards even though these soldiers could have passed Army Body Composition standards. This contributes to social change by raising awareness for better health standards, calling for better standards, and reasoning why with all the technology

available, heavier forces are still more useful than not. The significant correlations between Self-efficacy, Intellectual capabilities, Lifestyle, Stress management, and Supervisor leadership as well as between BMI, Physical fitness, Lifestyle, Stress management, and Supervisor leadership all suggest that there is a reasonable legitimacy in my BMI Determination Model and inspire hope for more research in this focus. Hypothesis 1 confirmed that an aspect of the Determination Model partially worked in determining Self-efficacy in that the Behavioral factors of Lifestyle and Stress management significantly predicted soldiers' Self-efficacy. Self-efficacy is inner power, the power within one that could motivate one to move mountains or that could be lacking and cause several failures in life.

Physical fitness and Lifestyle are key factors in the military weight management effort among many unknown factors yet to be determined. The U.S Army keeps soldiers that have permanent profiles, meaning they are unable to perform certain or any physical activity but their deemed by a medical doctor to be able to perform their duty in their occupational specialty within the army but may be exempt from some or all physical activities. Army professional schools will allow soldiers that are on permanent profile, but automatically will expel a soldier who cannot pass a portion of their APFT or meet the height and weight standards. This is done based of AR 600-9. Questions remain if that could be seen as a double standard. The people on permanent profiles, for one reason or another, are given some sort of tolerance because they got hurt while on duty. The same argument could now be made for overweight and obese soldiers. Prior to joining the Army, all service members passed their APFT; they also met height and weight

standards. One could argue that even though physical fitness is much needed in the military, the same tolerance given to the permanent profile service members should be given to the overweight and obese soldiers as they became obese while serving and it could have been caused by the environment in which they served directly or indirectly.

Finally, the height and weight or body composition program measurement, as done in the Army, could be subjective if the individuals who are taping the soldiers are not well-trained. Therefore, a specific program could make fair and impartial by training body composition specialists whose jobs could specifically be to measure, weigh, and tape soldiers for every company. Another program like the pregnancy physical training program that currently exists in selected garrisons could be created for overweight and obese soldiers to keep them in check and rehabilitated back to active duty. Currently used programs are less effective in many units leading to many being expelled. Another option would be that before they discharge a soldier for passing their physical readiness test by failing to meet body mass composition standards, they should first work on fixing the permanent profile soldiers that for most of the time, cannot run, cannot do pushups, but are considered more valuable than a soldier who is fully capable physically and mentally, but is few inches over the weight required.

Conclusion

At the beginning of this study, I had a strong conviction that the several nonfood related factors affected self-efficacy and BMI. While reviewing the literature, several gaps were evident. The results of this study filled some of those gaps. Prior researchers attribute food or eating habits as the number one cause of obesity or overweight issues.

BMI correlates with Lifestyle and Physical fitness and possibly more factors that deserve to be looked at in explaining overweight and obesity issues not necessarily considering food. Most research done on obesity was qualitative (Bodner, 2006; Creswell, 2009). This research was quantitative which gives solid results to build future research on. No researchers used a military setting, using the same current variables as well as SCT, this research did that and using all measured variables not only reliable but replicable. It also open room for debate that height and weight measurement can still be subjective and more scientific measures usage and uniformity could give more precise results. Factors like Lifestyle, Stress management, and Physical fitness definitely influences wellbeing and are also not indifferent to our Self-efficacy and BMI. All these factors are factors that could be managed using coaching or supervisory help or motivation.

The BMI determining model partially proved that some of the Personal and Behavioral factors are good fit model in predicting Self-efficacy and BMI. Lifestyle and Stress management significantly predicted Self-efficacy ($p<.001$). Physical fitness and Lifestyle significantly predicted BMI ($p<.05$) but a post hoc test revealed that a type II error was likely. In addition, there were significant correlations between Self-efficacy, Personal and Behavioral factors, between BMI, Personal and Behavioral factors, and between Behavioral and Environmental factors.

Positive social change implications include the opportunity for researchers and the military services to use these findings to promote healthy lifestyles, reduced stress, and physical fitness among soldiers to achieve higher self-efficacy and lower body mass index. More organizations will see better fitness results by incorporating frequent

physical fitness testing fitness testing, personal and behavioral factors assessments and leadership empowerment to maintain weight standards. This mainly revealed how more research can expand this philosophy by exploring larger samples, wider population in different workplaces, different countries as well as take into consideration many more variables like culture, gender, military ranks, and occupation. More research and focus needs to be done physical fitness testing and on the Army body composition program (AR 600-9, 2013) and weight in general for more comprehensive and effective results.

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Appendix A: Battalion letter of Acceptance

DSN: 475-9914

SPC Salma Theus,

Based on my review of your research proposal, I believe that you have a viable and worthwhile research topic entitled "A Correlational Analysis of Exercise, Leadership, Stress Management, Marital Status, ASVAB Scores, and Weight Among U.S. Army Personnel". I also understand that you want to have the ability to ask the 15th Engineer Battalion Soldiers to participate in your research and study as subject data to analyze.

Even if I have no objection to your study taking place, you should understand that the Department of Defense (DOD) - Institutional Review Board (IRB) is the final approving authority for any of your data collection to begin. If and when you receive DOD IRB final approval to begin data collection, you must still note that the 15th Engineer Battalion assumes no responsibility or obligation in the process of that data collection. The battalion's officials will not make Soldiers participate in any way. Nor should this letter of cooperation be taken as an approval to grant you permission to gather data; it is not an approval for data collection. Nor should it be taken as approval to engage in work on this research during the duty day. All work on your research is to be done while off-duty, during non-work hours.

All collection of Soldiers' data (marital status, weight, APFT score, ASVAB) from the participants of questionnaires will be solely at the participants' voluntary discretion. Participation must be voluntary. We reserve the right to withdraw from the study at any time, for any reason.

I understand that the data collected (once granted DOD IRB final approval) will remain entirely confidential and may not be provided to anyone outside of the research team without permission of the Walden University IRB.

Appendix B: Solicitation Card

I would like to ask your participation in my PHD Research dissertation titled "
Mass Index Standard Among U.S. Army Personnel" Personal, Behavioral, and Environmental Factors Influencing Self-efficacy and Body

Would you like to learn more? **Yes** **No**
Email Address :

Phone Number:

Name and Company:

Appendix C: Informed Consent Form

CONSENT FORM

You are invited to take part in a research study about how different factors affect soldiers meeting weight standards among Army personnel. The researcher is inviting volunteer soldiers (enlisted, Non Commissioned, and Commissioned officers) to be in the study. This form is part of a process called "informed consent" to allow you to understand this study before deciding whether to take part. This study is being conducted by Ms. Salma Theus, who is a doctoral student at Walden University. You may already know the researcher as a soldier, but this study is separate from her role in the Army.

Background Information:
The purpose of this study is to detect factors (other than Food) that affect soldiers meeting Army Weight standards by exploring Personal, Behavioral, and Environmental Factors and Self-Efficacy Influencing BMI among U.S. Army Personnel.

Procedures:
If you agree to be in this study, you will be asked to:
Fill out questionnaires in the month of April, 2014 Maximum one to two hour of your day
You will be asked to access your ASVAB scores from your current ERB, and your APFT scores card data to include your scores and your height and weight data. Bring the most recent copies with you if you choose to participate.
Four questionnaires will be measuring your self-efficacy or your ability to manage your daily affaires, your lifestyle, the way you cope with every day stress and you supervisor leadership in your team. Here are some sample questions:
The overall effectiveness of your team can be classified as: A. Not effective B. Only slightly effective, C. Effective D. Very Effective E. Extremely effective

Voluntary Nature of the Study:
This study is voluntary. Everyone will respect your decision of whether or not you choose to be in the study. No one in your battalion or company or in the United States Army will treat you differently if you decide not to be in the study. If you decide to join the study now, you can still change your mind during or after the study. You may stop at any time. You may ask any question at any time. You, your Battalion and the Army and any interested entity will receive a complete research report of the final findings.

Risks and Benefits of Being in the Study:
Being in this type of study involves some risk of the minor discomforts that can be encountered in daily life, such as fatigue, stress or becoming upset while answering questions that may trigger other things about yourself or your environment. Being in this study would not pose risk to your safety or wellbeing. No great risk is anticipated but in

case anything comes, the individual will be referred to professional for help (like Army OneSource, ACS, chaplain or Army life consultant) This study's potential benefits include documenting and bringing awareness about factors that affect weight using quantitative method and measured data. It will help refocus the social debate about obesity and overweight related issue on personal, behavioral and environmental factors (other than food) influence weight. Consequently it could help avoid old methods that have not worked.

Payment:
There are no payments or incentives for participating in this research.

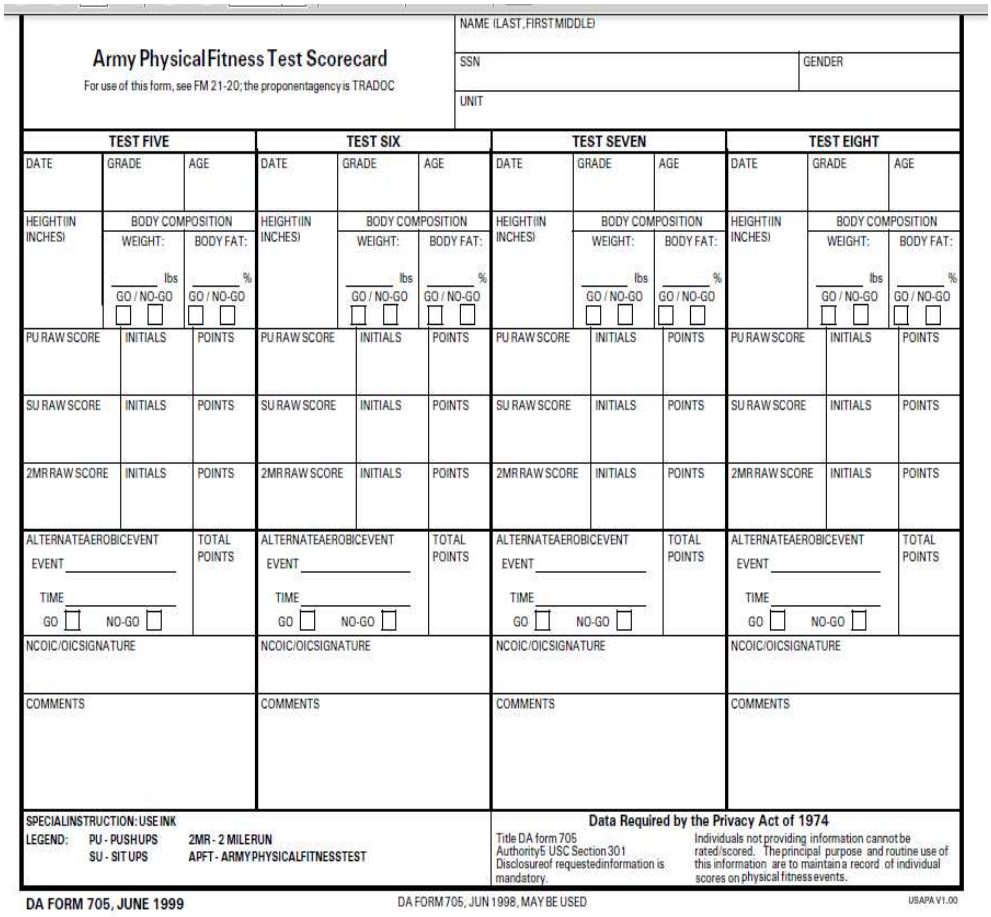
Privacy:
Any information you provide will be kept confidential. The researcher will not use your personal information for any purposes outside of this research project. Also, the researcher will not include your name or anything that could identify you in the study reports. Data will be kept secure (in a safe) by the data being locked in a secured lock box with a combination code that only I have access to, and on my secured computer for analysis proposes. Data will be kept for a period of at least 5 years, as required by the university. Even though your data will be identified with a number, your name or any personal information will not save on the data. When data collection is complete I have no way of knowing what data or number you gave. The limits to confidentiality include my duty to warn and report in case you intend to harm yourself or others.

Contacts and Questions:
You may ask any questions you have now. Or if you have questions later, you may contact the researcher via phone 01525 894 7270, email salmatheus@yahoo.com. If you want to talk privately about your rights as a participant, you can call Dr. Leilani Endicott. She is the Walden University representative who can discuss this with you. Her phone number is 001-612-312-1210 or email address irb@waldenu.edu), extension 3121210. Walden University's approval number for this study is **03-25-14-0150803 and it expires on March 24, 2015.**The researcher will give you a copy of this form to keep.

Statement of Consent:
I have read the above information and I feel I understand the study well enough to make a decision about my involvement. By signing I understand that I am agreeing to the terms described above.

Print your name	
Date of consent	
Participant's Signature	
Researcher's Signature	

Appendix D: Sample Army Physical Fitness Test Score Card



Army Physical Fitness Test Scorecard

For use of this form, see FM 21-20; the proponentagency is TRADOC

NAME (LAST, FIRST MIDDLE)

SSN | GENDER

UNIT

TEST FIVE			TEST SIX			TEST SEVEN			TEST EIGHT		
DATE	GRADE	AGE	DATE	GRADE	AGE	DATE	GRADE	AGE	DATE	GRADE	AGE
HEIGHT(IN INCHES)	BODY COMPOSITION WEIGHT: _____ lbs GO / NO-GO ☐ ☐	BODY FAT: _____ % GO / NO-GO ☐ ☐	HEIGHT(IN INCHES)	BODY COMPOSITION WEIGHT: _____ lbs GO / NO-GO ☐ ☐	BODY FAT: _____ % GO / NO-GO ☐ ☐	HEIGHT(IN INCHES)	BODY COMPOSITION WEIGHT: _____ lbs GO / NO-GO ☐ ☐	BODY FAT: _____ % GO / NO-GO ☐ ☐	HEIGHT(IN INCHES)	BODY COMPOSITION WEIGHT: _____ lbs GO / NO-GO ☐ ☐	BODY FAT: _____ % GO / NO-GO ☐ ☐
PU RAW SCORE	INITIALS	POINTS	PU RAW SCORE	INITIALS	POINTS	PU RAW SCORE	INITIALS	POINTS	PU RAW SCORE	INITIALS	POINTS
SU RAW SCORE	INITIALS	POINTS	SU RAW SCORE	INITIALS	POINTS	SU RAW SCORE	INITIALS	POINTS	SU RAW SCORE	INITIALS	POINTS
2MR RAW SCORE	INITIALS	POINTS	2MR RAW SCORE	INITIALS	POINTS	2MR RAW SCORE	INITIALS	POINTS	2MR RAW SCORE	INITIALS	POINTS
ALTERNATE AEROBIC EVENT EVENT _____ TIME _____ GO ☐ NO-GO ☐		TOTAL POINTS	ALTERNATE AEROBIC EVENT EVENT _____ TIME _____ GO ☐ NO-GO ☐		TOTAL POINTS	ALTERNATE AEROBIC EVENT EVENT _____ TIME _____ GO ☐ NO-GO ☐		TOTAL POINTS	ALTERNATE AEROBIC EVENT EVENT _____ TIME _____ GO ☐ NO-GO ☐		TOTAL POINTS
NCOIC/OIC SIGNATURE			NCOIC/OIC SIGNATURE			NCOIC/OIC SIGNATURE			NCOIC/OIC SIGNATURE		
COMMENTS			COMMENTS			COMMENTS			COMMENTS		

SPECIAL INSTRUCTION: USE INK

LEGEND: PU - PUSH UPS; SU - SIT UPS; 2MR - 2 MILE RUN; APFT - ARMY PHYSICAL FITNESS TEST

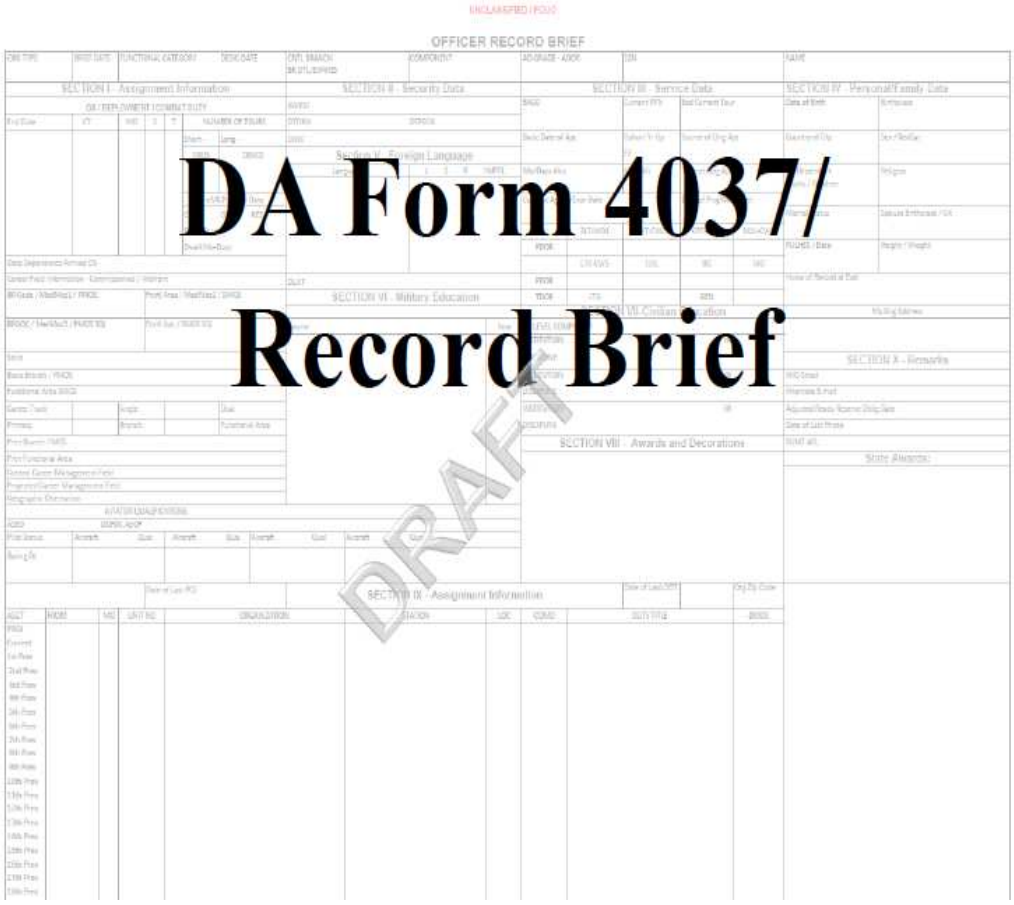
Data Required by the Privacy Act of 1974

Title DA form 705
Authority 5 USC Section 301
Disclosure of requested information is mandatory.

Individuals not providing information cannot be rated/scored. The principal purpose and routine use of this information are to maintain a record of individual scores on physical fitness events.

DA FORM 705, JUNE 1999 DA FORM 705, JUN 1998, MAY BE USED USAPA V1.00

Appendix E: Sample Record Brief



Appendix F: General Self Efficacy Scale

General Self-Efficacy Scale (GSE)

English version by Ralf Schwarzer & Mattias Jerusalem, 1995

Purpose: To measure participants' self-efficacy

Directions: Circle statement that applies to you
1 = Not at all true
2 = Hardly true
3= Moderately true
4 = Exactly true

_____ 1. I can always manage to solve difficulty problems if I try hard enough.

_____ 2. If someone opposes me, I can find the means and ways to get what I want.

_____ 3. It is easy for me to stick to my aims and accomplish my goals.

_____ 4. I am confident that I could deal efficiently with unexpected events.

_____ 5. Thanks to my resourcefulness, I know how to handle unforeseen situations.

_____ 6. I can solve most problems if I invest the necessary effort.

_____ 7. I can remain calm when facing difficulties because I can rely on my coping abilities.

_____ 8. When I am confronted with a problem, I can usually find several solutions.

_____ 9. If I am in trouble, I can usually think of a solution.

_____ 10. I can usually handle whatever comes my way.

Appendix G: Lifestyle Assessment Inventory

Lifestyle Assessment Inventory

Purpose: The purpose of this lifestyle assessment inventory is to increase awareness of areas in your life that increase your risk of disease, injury, and possibly premature death. A key point to remember is that you have control over each of the lifestyle areas discussed. Awareness is the first step in making change.

Directions: Place a check mark by each statement that applies to you.

A. Physical Fitness

_____ I exercise for a minimum of 20 to 30 minutes at least 3 days a week.

_____ I play sports routinely (2 to 3 times per week).

_____ I walk for 15 to 30 minutes (3 to 7 days per week).

B. Body Fat

_____ There is no place on my body where I can pinch more than 1 inch of fat.

_____ I am satisfied with the way my body appears.

C. Stress Level

_____ I find it easy to relax.

_____ I rarely feel tense or anxious.

_____ I am able to cope with daily stresses better than most people.

D. Car Safety

_____ I have not had an auto accident in the past 4 years.

_____ I always use a seat belt when I drive.

_____ I rarely drive above the speed limit.

E. Sleep

_____ I always get 7 to 9 hours of sleep.

_____ I do not have trouble going to sleep.

_____ I generally do not wake up during the night.

F. Relationships

_____ I have a happy and satisfying relationship with my spouse or boy-girlfriend.

_____ I have a lot of close friends.

_____ I have a great deal of family love and support.

G. Diet

_____ I generally eat three balanced meals per day.

_____ I rarely overeat.

_____ I rarely eat large quantities of fatty foods and sweets.

H. Alcohol Use

_____ I consume fewer than two drinks per day.

_____ I never get intoxicated.

_____ I never drink and drive.

I. Tobacco Use

_____ I never smoke (cigarettes, pipe, cigars, etc.).

_____ I am not exposed to second-hand smoke on a regular basis.

_____ I do not use smokeless tobacco.

J. Drug Use

_____ I never use illicit drugs.

_____ I never abuse legal drugs such as diet or sleeping pills.

K. Safe Sex

_____ I always practice safe sex (e.g., always using condoms or being involved in a monogamous relationship).

Scoring:

1. Individual areas: If you have fewer than three checks in categories A through K, you can improve this area of your lifestyle.
2. Overall lifestyle: Add up your total number of checks. Scoring can be interpreted as follows:

23 - 29 Very healthy lifestyle
17 - 22 Average healthy lifestyle
< 16 Unhealthy lifestyle (needs improvement)

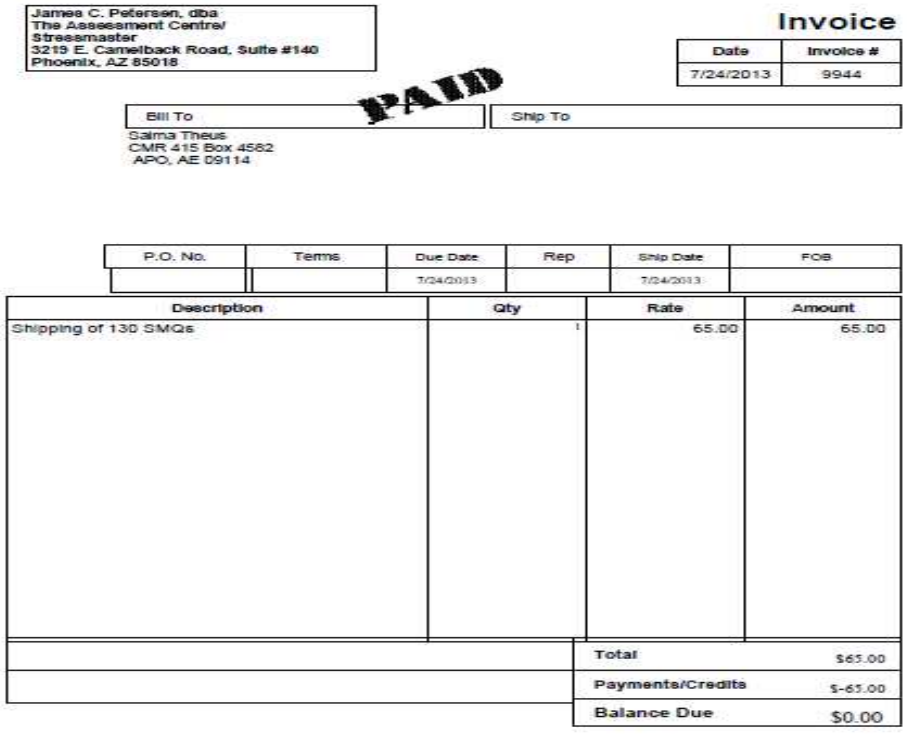
Appendix H: Copyright for the Stress Management Questionnaire

James Petersen, Ph.D.
To salmatheus@yahoo.com
Today at 4:08 PM

Dear Salma,

This letter confirms that Salma Theus has permission to use the Stress Management Questionnaire (SMQ) for use in a research project and dissertation on stress and has legitimate right to report the results of this research in a dissertation report.

Jim
James C. Petersen, Ph.D.
STRESSMASTER
Phoenix, AZ USA
Skype "TheStressmaster"
http://www.stressmaster.com



James C. Petersen, dba
The Assessment Centre/
Stressmaster
3219 E. Camelback Road, Suite #140
Phoenix, AZ 85018

Invoice

Date	Invoice #
7/24/2013	9944

PAID

Bill To
Salma Theus
CMR 415 Box 4562
APO, AE 09114

Ship To

P.O. No.	Terms	Due Date	Rep	Ship Date	FOB
		7/24/2013		7/24/2013	

Description	Qty	Rate	Amount
Shipping of 130 SMQs	1	65.00	65.00

Total	$65.00
Payments/Credits	$-65.00
Balance Due	$0.00

THE SMQ

How frequently do you (Circle the Number)...

		VERY RARELY				VERY FREQUENTLY
21.	Move, walk, or eat rapidly?	1	2	3	4	5
22.	Have moist palms, feet, or underarms?	1	2	3	4	5
23.	Have very little time to relax and let go?	1	2	3	4	5
24.	Feel unenthusiastic?	1	2	3	4	5
25.	Overwork a task to get it perfect?	1	2	3	4	5
26.	Get upset when a joke is made about you?	1	2	3	4	5
27.	Feel unhappy?	1	2	3	4	5
28.	Demonstrate that you are a perfectionist at what you do?	1	2	3	4	5
29.	Over perspire?	1	2	3	4	5
30.	Find it difficult to slow down?	1	2	3	4	5
31.	Feel pessimistic?	1	2	3	4	5
32.	Hurry the speech of others by saying such things as: "uh-huh" or "yes, yes, yes"?	1	2	3	4	5
33.	Fail to delegate because you believe you can do it better than others?	1	2	3	4	5
34.	Feel discouraged?	1	2	3	4	5
35.	Talk about people who disappoint you?	1	2	3	4	5
36.	Find that you are unable to locate things such as papers, tools, folders?	1	2	3	4	5
37.	Have difficulty failing or staying asleep?	1	2	3	4	5
38.	Feel unappreciated?	1	2	3	4	5
39.	Have cold hands or feet?	1	2	3	4	5
40.	Talk rapidly?	1	2	3	4	5
41.	Feel frustrated at others' behaviors (e.g., become irritated at your progress behind a slow driver or in a line of customers waiting to be served)?	1	2	3	4	5

THE SMQ

LW - LIFE/WORK SATISFACTION

How satisfied are you with your*. . .

		VERY SATISFIED				VERY UNSATISFIED
79.	Career choice?	1	2	3	4	5
80.	Job choice?	1	2	3	4	5
81.	Coworkers?	1	2	3	4	5
82.	Level of income?	1	2	3	4	5
83.	Immediate supervisor?**	1	2	3	4	5
84.	Amount of work?	1	2	3	4	5
85.	Advancement opportunities?	1	2	3	4	5
86.	Personal relationships?	1	2	3	4	5
87.	Level of exercise/personal fitness?	1	2	3	4	5

Total CIRCLED numbers and enter in this box. LW = [ ] 5

* If you are a homemaker, answer in terms of your work /career as a homemaker, mother, father, etc.

** If you do not report to anyone but yourself, answer in terms of your level of satisfaction with your "self management" with your personal life or work activities.

Appendix I: Copyright to use Multiple Leadership Questionnaire

Original E-mail

From : info@mindgarden.com

Date : 11/26/2012 02:15 PM

To : Salma Theus [salma.theus@waldenu.edu]

Subject : Response from Mind Garden - MLQ - administration options for RESEARCH USE

Hello Salma Theus,
The Multifactor Leadership Questionnaire (MLQ) is a copyrighted instrument and requires a purchased license for EACH reproduction/administration.

mind garden

Sales Receipt

Order #27142 **Date:** 07/19/2013 00:17:34 EDT

Thank you for your order. A copy of this sales receipt will be e-mailed to you for your records. Please login to access your electronic products (login directions are at the bottom of this page). If you ordered a report as part of an academic course, your product requires additional set up and is not immediately available.

Please do not reload this page or click the back button or your credit card may be charged twice.

Ship To:		Bill To:	
Name:	Salma Theus	**Name:**	Salma Theus
Email Address:	salmatheus@yahoo.com	**Email Address:**	salmatheus@yahoo.com
Phone Number:	[redacted]	**Phone Number:**	[redacted]
Fax Number:		**Fax Number:**	
Company:	US Army	**Company:**	US Army
Address:		**Address:**	

Product	Code	Quantity	Price/Each	Total
TMLQ Manual Format: shipped paper document	TMLQ-Manual(paper)	1	$40.00	$40.00
TMLQ Reproduction License Licenses: 150 Format: shipped paper document	TMLQ-License(paper)	1	$135.00	$135.00

Estimated Shipping:	$0.00
Sales Tax:	$0.00
Total:	**$175.00**

Team Multifactor Leadership Questionnaire (cont.)

Not at all	Once in a while	Sometimes	Fairly often	Frequently or always
0	1	2	3	4

Members of my team . . . . .

46.	articulate a compelling vision of the future.	0	1	2	3	4
47.	look at problems from many different angles.	0	1	2	3	4
48.	provide useful advice for each other's development.	0	1	2	3	4

49. The overall effectiveness of the team can be classified as:
    A. Not effective
    B. Only slightly effective
    C. Effective
    D. Very effective
    E. Extremely effective

50. In all, how satisfied are you with the leadership abilities of the team that you are rating?
    A. Very dissatisfied
    B. Somewhat dissatisfied
    C. Neither satisfied nor dissatisfied
    D. Fairly satisfied
    E. Very satisfied

51. The gender mix of your team:
    A. All male
    B. Majority male
    C. Equally mixed male and female
    D. Majority female
    E. All female

52. Your own ethnicity:
    A. African American
    B. Alaskan Native
    C. Asian or Pacific Islander
    D. Caucasian
    E. Hispanic
    F. Native American
    G. Other (please specify):

53. Your own gender:
    A. Female
    B. Male

Curriculum Vitae

Salma Theus
salmatheus@yahoo.com

SOCIAL SERVICES EXPERIENCE

Case Manager 2008 -2009
Human Potential Consultant LLC, Carson, CA
Managed 16+ parolees' cases every week
Provided individual and group counseling to adults for two companies owned by the corporation
Taught Anger Management, Coping Skill, Relapse Prevention, Budget Management to adults populations
Provided 12+ marketing conference presentations to promote company services

Marriage and Family Therapist Trainee 2007- 2008
Women of Worth, Gardena, CA
Provided therapy services and conflict resolution management skills to couples and single adults
Counseled adults on drug dependency
Offered social skills and community involvement counseling to homeless population

Marriage and Family Therapist Trainee 2007- 2008
DMH, Masada Homes, Carson CA
Provided therapy to children with drug dependency issues
Counseled pregnant teenagers with mental health issued
Provided therapy to abused children and school age children with separation anxiety

Outreach Counselor 2007
California States University, Dominguez Hills, Carson CA
Counseled middle school and high school students on academic options, careers, and scholarships

MILITARY EXPERIENCE

US Army Military Experience: Noncommissioned Officer Sergeant (E5) 2010 – Current: Squad leader and Garrison Pregnant and Postpartum soldiers' physical fitness leader: manage soldiers in maintaining their physical and mental fitness and get mission accomplished
2013: Created monthly staff duty and change of quarter schedule (Roster) for more than 400 soldiers and publish them monthly

Review all Battalion publication before it is approved and publish
Managed and created a biweekly PowerPoint reflecting all battalion operations
Organized junior leader academy for newly appointed leaders
Helped battalion mission in building quarters in Afghanistan and Kuwait, and maintained proper security in Germany
As a team leader, managed and accounted for soldiers; tracked, military vehicles and equipment worth 0.5 million
Security clearance: Secret
Record PT Scores: 300
Record Marksmanship: Sharpshooter

BUSINESS EXPERIENCE:
Internet Sales Consultant (2005- 2007)
Scott Robinson Honda, Torrance, CA
Top sales representative for 3 months
Ranked Top 3 in sales for over 12 months
Dispatcher (2003-2005)
La Sierra University, Riverside, CA
Dispatched all student calls to officers on duty
Recorded all campus incidents that happened during duty period
Conducted reports and hourly check

EDUCATION:
Ph.D. in Psychology, Organizational Psychology (in progress)
Walden University, Minneapolis, MN (USA)
Dissertation: "Personal, Behavioral, and Environmental Factors Influencing Self-efficacy and Body Mass Index Standard Among U.S. Army Personnel"
M.S. in Mental Health Therapy (2008)
California States University, Dominguez Hills, Carson CA (USA)
B.A. in Business Administration (2005)
La Sierra University/School of Business, Riverside, CA (USA)
A.A.S. in, Computer Science and Management (2002)
ISIG, Ouagadougou, **Burkina Faso**

CERTIFICATION:
California Basic Educational Skills Test (CBEST): Passed 12/6/2008
TECHNICAL SKILLS:
Clinitrak, Microsoft Word, Excel, Visual Basic, Access, HTML, Power Point, Page Maker. Fluent in French.

PROFESSIONAL SKILLS:

Diagnose with DSM-IV, behavior management, record keeping, individual counseling, group facilitation, team leadership, conflict resolution, decision making.

COMMUNITY INVOLVEMENT:

Volunteer, Schweinfurt Elementary School	2011-2012
Volunteer, Netzaberg Elementary School	2012-2013
Volunteer, Schweinfurt community cleaning and painting	2012
Tutor, Loma Vista Middle School	Fall 2004
Volunteer, Sierra Public Library	2005

AWARDS: Army Commendation Medal (ARCOM) (1), Army Good Conduct Medal (1) Iron Warrior Award (Warrior Leader Course), Armed Forced Service Medal, NATO Medal, Army Achievement Medal (AAM)(3), Certificates of Achievement (COA) (2) National Defense Service Metal, Afghanistan Campaign Metal (ACM), Global War on Terrorism Expeditionary Metal (GWTEM), Global War on Terrorism Service Metal (GWTSM), Army Service Ribbon (ASR), Oversea Service Ribbon (OSR), Army Physical Fitness Award (APFT).