

ASSESSING SOLDIER'S WELLNESS HOLISTICALLY: AN EVALUATION OF
INSTRUMENTS APPLICABLE TO PRIMARY CARE

by

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“Your guidepost stands out like a ten-fold beacon in the night: Duty, Honor, Country. The soldier, above all other people, prays for peace, for he must suffer and bear the deepest wounds and scars of war.” (MacArthur, 1962)

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ABSTRACT

Increasingly, experts recommend that military primary care clinics consider implementing delivery of care based on models of holistic wellness. Several wellness measurement tools exist, but none of these has been applied to a military primary care clinic. In this study, the psychometric testing of two holistic wellness measurement instruments was carried out for possible use with soldiers in primary care clinics. The instruments tested were the *Perceived Wellness Model* (Adams, Bezner, & Steinhardt, 1998) and the *Optimal Living Profile* (Renger et al., 2000). Both instruments appear suitable for use in future studies for measuring wellness in Cadet Soldiers. The measures provided by these instruments provide important data that professionals can use to assist young soldiers in their multidimensional wellness development.

CHAPTER 1: INTRODUCTION TO THE STUDY

Chapter 1 describes the background and purpose for the study, as well as the research questions to be addressed.

Background

In the wake of the war on terrorism, U.S. troops have undergone repeated deployment into battle conditions. As a result, perhaps more than any time in recent history, the current generation of U.S. soldiers is experiencing multiple traumatic experiences that impact their short-term and possibly long-term wellness. However, because of the frequent, repeated deployment of troops, scientists are increasingly able to assess the health and level of post-traumatic stress disorders (PTSDs) in soldiers prior to and following engagement (Breslau, 2002). Existing studies of military stress have focused on identifying two sets of factors: those that predispose individuals to negative stress responses and outcomes and those that mitigate the deleterious effects of stress (Myers & Bechtel, 2004). However, these studies are limited in their ability to address questions regarding the etiology, development, and prevention of PTSD (Chando, 2003). In addition, far less has been written on the role of primary care and soldier wellness (Wickramasekera, 1998) in the development of PTSD.

Post Traumatic Stress Disorder (PTSD)

Post-Traumatic Stress Disorder (PTSD) was initially defined by the American Psychiatric Association (APA) in the 1980s (Burstow, 2005), based in part on the experiences of soldiers and victims of war. The criteria defining PTSD include an initial precipitating stressful event (i.e., the event provokes intense fear, helplessness, or horror with a multidimensional effect on the person), a time frame (at least one of four re-experiencing symptoms are present in the past month), and a list of debilitating symptoms encompassing multiple subcategories of anxiety and depression

(Agaibi & Wilson, 2004). Applying the APA criteria to a review of epidemiological studies conducted within a ten-year period, Andersen (1998) found a consistent 15-20% prevalence of PTSD in post-deployment soldiers. In addition, PTSD was shown to produce a wide range of symptoms in soldiers who screened positive for the APA criteria (Andersen, 1998; Stretch, Knudson, & Durand, 1998).

Post-Traumatic Stress Disorder (PTSD) affects both biological and psychological processes (McFarlane, 2000; Wilson, 2004). The biological processes affected include neurological and physiological responses, while the psychological processes involve changes in perception, memory, cognition, learning, personality processes, and understanding of self (Wilson, 2004). Thus, trauma's impact on the individual is a complex mind-body-spirit phenomenon (Wilson, 2004).

Exposure to a traumatic event is thought to be the main trigger in the development of PTSD (Blanchard, Kolb, & Pallmeyer, 1982). However, individual differences in biological and psychological processes result in considerable variation in PTSD symptoms (Summerfield, 2000). Research has shown that PTSD frequently impairs some or all of the person's emotional, intellectual, occupational, physical, social, and spiritual capacities (Gluhoski & Wortman, 1996). Soldiers feel depressed, anxious, and separated from the realities of life with a negative emotional and spiritual outlook (Kozaric-Kovacic & Kocijan-Herigonja, 2001). Further, soldiers with PTSD perform poorly on measures of intelligence, verbal fluency, memory, and attention compared with soldiers not afflicted with PTSD (Tzvi et al., 1990). The cascading PTSD symptoms leave soldiers feeling that they have little in common with civilian peers, and issues that concern friends and family seem trivial (Bolton 2004).

Individuals also vary widely in their vulnerability for developing PTSD. For example, higher cognitive ability and strong social support have been shown to buffer individuals against PTSD, whereas emotional disorders and negative self-assessment of stress-coping behavior heightens the risk of developing PTSD (Flouri, 2005). Causal attributions related to PTSD include individual resource attributes (level of intelligence, emotional stability, and positive spiritual outlook). These lead to variance in the way soldiers deal with trauma. (Burstow, 2005; Creamer et al., 2006; Ochberg, 1991). Although these studies indicate that there is a correlation between the variables of wellness prior to soldier deployment and the diagnosis of PTSD, there is not enough research to call this relationship as deterministic (Kozaric-Kovacic & Kocijan-Harigonja, 2001).

However, the results do suggest links between particular coping behaviors within the emotional, intellectual, and spiritual dimensions and PTSD (Knezevic, Opacic, Savic, & Priebe, 2005). In addition, the likelihood of developing chronic PTSD (symptoms lasting three months or longer) has been shown to be related to pre- and post-deployment wellness, in addition to features of the trauma itself (Flouri, 2005; Ursano, 1999; Wickramasekera, 1998).

The importance of investigating factors that can influence the development of PTSD in soldiers is increasingly recognized. The APA's Public Policy Office, for instance, lists several protective factors that may help promote coping and positive adjustment to soldiers exposed to severe trauma (Flouri, 2005). These protective factors include: strong social support, a spiritual component, positive adaptive coping and problem-solving skills, economic resources, intellectual achievement, and developmental age. In contrast to the military, where such measurement is not routine, measurement of such "protective factors" in the civilian medical community is routinely done by multiple single dimensional instruments (Singer & Ryff, 2001).

Statement of the Problem

Valid measures of holistic health that can be used in the military primary care setting are sorely needed, together with ways to present data efficiently and effectively. With the increased interest in holistic models of care that target responses in the context of soldier experience (i.e., emotional, environmental, intellectual, physical, social, and spiritual models), holistic measures that are multidimensional and entail many interrelated parts are essential for understanding the whole soldier (Kolcaba & Steiner, 2000), both pre-and post-deployment.

Purpose of Research

The long-term goal of this research is to develop an electronic clinical dashboard that allows primary clinicians who are increasingly time constrained to accurately, efficiently, and holistically visualize soldiers' wellness, as measured through valid, reliable, and easy-to-use instruments. An electronic wellness dashboard will help gather, organize, and support the clinician's evaluation of the soldier's wellness information.

Clinical dashboards are appealing because they: (1) present a wide number of different metrics in a single consolidated view; (2) roll up details into high-level summaries; and (3) provide intuitive indicators, such as gauges and stoplights, that are instantly understandable (e.g., in financial/business dashboards, a red bar means a problem, and a green bar means everything is on plan). Dashboards should enable clinicians to appraise critically the consolidated information and interpret and understand patient wellness with increased speed, accuracy, and completeness.

Increased capture of patient data through the electronic visualization of patient information (i.e., via the dashboard) is expected to provide easy understanding of evidence that can be used to reach optimal patient outcomes. As a result, nurses should be able to better integrate the data into framed information (evidence) in a practice situation. After being initially collected from

individual patients, dashboard data might be aggregated across patients to provide evidence for this population. Finally, the display format used for the dashboard, if successful, could be extended to other problems and domains.

To accomplish this will require that valid, reliable instruments be identified to collect data that provide accurate, comprehensive, holistic information about a patient's wellness. Therefore, the purpose of this research study is to identify a valid, reliable, easy-to-use instrument for measuring wellness holistically in a military population. The study has two objectives:

1. Evaluate, in a military population, the psychometrics of two existing instruments that collect data to measure wellness holistically; and
2. Determine the wellness instrument that demonstrates adequate reliability and validity.

Research Questions

The following research questions were addressed:

1. What currently available holistic wellness instrument can be used to provide a reliable measure of a soldier's wellness?
 - a. What is the internal consistency of the Perceived Wellness Survey in a soldier population?
 - b. What is the internal consistency of the Optimal Living Profile in a soldier population?
2. What currently available holistic wellness instrument can be used to provide a valid measure of a soldier's wellness? To answer this general question, the following more specific questions were addressed:
 - a. What is the construct (convergent) validity of the Perceived Wellness Survey and the Wellness Evaluation of Lifestyle in a soldier population?

- b. What is the construct (convergent) validity of the Optimal Living Profile and the Wellness Evaluation of Lifestyle in a soldier population?
3. What currently available holistic wellness instrument can be used to provide a valid measure of a soldier's wellness? To answer this general question, the following more specific questions were addressed:
 - a. What is the usefulness of the Perceived Wellness Survey in a soldier population?
 - b. What is the usefulness of the Optimal Living Profile in a soldier population?

Military Measures of PTSD

Lack of pre-deployment and post-deployment data that may have indicated the nature of wellness changes among returning veterans from the Gulf War prompted the formation of the force health protection (FHP) strategy (Hyams, Riddle, Trump, & Wallace, 2002). The FHP unified wellness protection strategy mandates assessments for all soldiers both pre- and post-deployment and information sharing with the soldiers by the clinicians, thus making soldiers partners in protecting their wellness by supplying them with the knowledge, skills, and resources needed to maintain wellness during their military duty (Trump, 2002).

Both the pre-deployment (DOD 2795) and post-deployment (DOD 2796) forms required of all soldiers are problem-oriented health risk assessment tools. DOD 2795 and DOD 2796 each target biological and psychological problems. A study of 2,530 U.S. combat troops completing a tour of duty in Iraq determined that 15 to 17% of the troops met the screening criteria (DOD 2796) for PTSD (Hoge et al., 2004). Of those whose responses were positive for a mental disorder, only 23 to 40% sought mental health care and were more likely to seek help for physical symptoms through their primary care clinician. It is well documented in other studies that over 50% of patients with mental health problems are seen only in primary care (Cowley, 2000).

Recognizing primary care as the first level of medical care for soldiers, the Primary Care Screening Tool for PTSD (Appendix G) was designed by psychiatrists for use in an outpatient setting (DOD, 2001). It is a four-item instrument, providing a quick risk assessment that is problem focused and detects symptoms as indicators of PTSD (DOD, 2001). Affirmative responses to three or more of the questions will prompt the clinician to refer the patient to psychiatry for consultation.

The Primary Care Screening Tool provides a snapshot of the soldier's biological and psychological problems. The Government Accountability Office (GAO) examined computerized data on 178,664 soldiers who had completed the Primary Care Screening Tool and reported that 9,145 (5%) were at risk for PTSD, but only 2,029 (22% of that figure) had been referred to mental health specialists. Levin (2006) stated that "This is about screening, not treatment. We're not even at the stage of knowing whether they were treated" (p. 5). Referral depends on the clinical judgment of the clinician who reviews the PTSD Primary Care Screening Tool forms, and objectivity is not built into the instrument (Levin, 2006). Research shows similar trends across the civilian sector; that is, a large percentage of patients' mental health problems are not diagnosed in primary care (Cowley, 2000; Stanley & Kunik, 2005; Stein, Roy-Byrne, & Crasko, 2005). In a review of several studies, it was found that depression was not detected in approximately 45% of the patients (Bartels, Coakley, & Zubritsky, 2004). Stein et al. (2005) noted that anxiety disorders also have similar undetected diagnosis rates equivalent to or greater than the rates of undetected depression in primary care. Because a large percent of patients seek mental health care in primary care and the major categories of presenting PTSD symptoms stem from depression and/or anxiety, military primary care providers will need to use "efficient inclusive instruments" to lead them to the correct diagnosis (Stanley & Kunik, 2005).

It is difficult to meet the two goals of the FHP strategy plan (promoting and sustaining soldier wellness and sharing wellness information) without a comprehensive, objective primary care wellness instrument (Breslau, 2002; Ozer, Best, Lipsey, & Weiss, 2003; Salmon & Bryant, 2002). Further, studies to date have indicated concerns about the subjective nature of the Primary Care Screening Tool, as well as about the instrument's ability to assess accurately whether soldiers are at risk for PTSD (Levin, 2006; Trump et al., 2002, 2004).

The Contexts of Trauma: Holistic Appraisal of PTSD

The Committee on Future Direction for Behavioral Health and Social Sciences Research at the National Institutes of Health has urged increased support for the study of “positive health,” a wellness protective variable defined as resilience and positive coping (Haase, 2004). Resilience in wellness refers to confidence and control (intellectual, occupational, and physical) in the face of adversity. In addition, self-transcendence has been identified as a core characteristic of resilience in life-threatened populations such as cancer patients and soldiers (Bolton, 2001; Haase, 2004). One way to gauge the resilience of soldiers is through objective holistic measures of their wellness dimensions (Haase, 2004) that assess the whole person—body, mind, and spirit—within a particular timespan, space, and context (Cooperstein, 1999).

Adopting a Holistic View of Wellness

Clearly there are barriers to moving to the recommended holistic wellness model and applying a holistic wellness instrument in a busy military primary care clinic. Primary care generally follows a biomedical model of care and focuses on obtaining information within that framework (Kelly et al., 2005). This model emphasizes collecting patient information related to disease and disease categories and encourages episodic care (Dacher, 1985, DeLusignan, Pritchard, & Chan, 2002; Staggers & Thompson, 2002). As a result, the patient record consists largely of

physiological variables from acute episodes of care together with patients' responses to medical treatment (Green et al., 2004; Showstack, 2003). This provides a very limited view of the patient.

Second, the data that are collected in primary care are not presented in an easy-to-understand format that can be used by clinicians and patients alike. Presentation of patient information occurs as a massive and unwieldy collection of unstructured data (Kolcaba & Steiner, 2000); context and meaning are absent. It is left up to the clinician to integrate and analyze large amounts of patient data. As primary care moves towards collecting data within a holistic model, the aggregation and presentation format of clinical data must change.

Third, primary care clinicians operate under tight time constraints, seeing an increasing number of patients in an increasingly short time. Therefore, unless the information for a holistic wellness assessment is readily available in an easy-to-understand format, it is unlikely to be used.

It is estimated that as many as one in six soldiers returning from Iraq and Afghanistan will suffer symptoms of PTSD, including nightmares, flashbacks, and severe anxiety (Hoge et al., 2004). Trauma does not act on one isolated area of the body; once PTSD symptoms develop from the psychobiological interaction, thus there is an impact on all dimensions of the person (McFarlane, 2000). However, typically wellness is not measured holistically in primary care; instead, the focus is on illness. The challenge for military primary care clinics is to find ways to support soldiers, before and after deployment, by gathering information on soldier wellness and making it accessible to both soldiers and other clinicians through appropriate visual formats.

This research will enhance our understanding of the multidimensional effect of combat on soldiers by measuring variables that underscore holistic wellness both pre- and post-deployment. Theoretically, primary preventive measures might include screening out vulnerable military recruits. In practice, primary preventive measures can include education with an emphasis on

developing positive coping and problem-solving skills and the recommended presence of a psychiatry liaison in the primary care (Castro, Bienvenu, Hoffman, & Adler, 2000; Cowley, 2000; Freidman, Schnurr, & McDonagh-Coyle, 1994; McBride & Armstrong, 1995). Effective assessment and clinical care pre-deployment can help meet the goal of minimizing and, hopefully, preventing any acute or chronic adverse health effects of military service, including military deployments. Such holistic health assessments combined with appropriate follow-up can, and should, play a crucial role in helping our returning soldiers heal themselves in body, mind, and spirit.

In addition, this research supports the goals of evidence-based practice. Measuring wellness via an accurate instrument and presenting the wellness data in an easily usable format (e.g., an electronic dashboard) could enhance clinicians' ability to provide more comprehensive, holistic care to soldiers. The need for this research is exemplified by a military installation in New York with primary care clinics on site. There has been a renewed focus on implementing expert computer systems in military clinics. Although there are no explicit statements in either of the clinics' mission or vision statement about the importance of information technology, one clinic has been chosen by the Army Research Center as a pilot for an Ultra Clinic because of the large active military population and the difficulty in caring for these patients with dated computer systems.

A challenge faced by clinicians in the primary care clinics in this location is that their mission has grown more complex and demanding. Each clinician must see a minimum of 25 patients per day in 15 to 20 minute appointments. In one day, up to 150 soldiers can pass through the primary care clinic. The clinic has an excellent electronic network and an established information technology infrastructure that could easily support an electronic dashboard, the long term goal of this research.

Summary

Chapter 1 described the background, purpose and significance of the study, as well as the research questions. The literature advocates taking a holistic approach to PTSD (Castro, Bienvenu, Hoffman, & Adler 2000). The inadequacy of instruments to measure soldier wellness holistically in primary care limits the effectiveness of primary care clinicians in understanding both the possible causal attributions of PTSD and the wellness dimensions affected by PTSD (Agaibi & Wilson, 2005). Measuring wellness via an accurate instrument and presenting the wellness data through an efficient format (e.g., an electronic dashboard) could enhance clinicians' ability to provide more comprehensive, holistic care to soldiers.

CHAPTER 2: CONCEPTUAL FRAMEWORK AND LITERATURE REVIEW

Chapter 2 describes the conceptual framework for the study and how it will be operationalized for this research. Existing models and instruments for measuring wellness holistically are presented and evaluated. Finally, literature is reviewed relevant to the effective visual presentation of clinical information.

Conceptual Framework

The conceptual framework for this study is the Informatics Research Organizing Model (IROM) (Effken, 2002). The IROM is an organizing framework for informatics research. The IROM can be used to guide both nursing research and the clinical application of informatics.

The IROM has three major components. The first component is the Systems Development Life Cycle (SDLC), which is represented by an inner circle. The SDLC is a sequence of stages for technology innovation in which the output of each stage becomes the input for the next (Siau, 2005). These stages are characterized and divided into a sequence of plan, analyze, design, implement, and maintain. The second component represents the four nursing metaparadigmatic constructs of context, client, intervention (nursing), and outcome, as modified for systems and informatics research (Effken, 2002). Arrows demonstrate the interconnectedness of each of these four constructs. The third component is the data, information, knowledge continuum that is below the two circular dimensions of the IROM.

Because the IROM is at a high level of abstraction, it is necessary to operationalize the concepts for specific research. The study focused on the design and evaluation phases of the SDLC. The goal of the study was to compare the psychometrics of two holistic wellness instruments as a way to transform wellness data about soldier wellness into understandable

information so that it becomes actionable knowledge for the clinician. The study is framed within IROM's four metaparadigmatic constructs: context, client, intervention, and outcome.

Context and Client

For this study, clients were first-year Active Duty Cadets at the United States Military Academy. All Cadets participating in this study were between 17 and 23 years old (DOD, 2001). Cadets are stationed on the post for four years, while attending a baccalaureate of science degree and leadership training. Many of them preparing to deploy with combat units within two years after graduation.

Intervention

The long-term goal of this research is to develop an interactive computerized dashboard to measure wellness. The prototype dashboard will integrate clinical information about patients' wellness with accessibility for both provider and patient. Preliminary to dashboard development, instruments will be identified to collect data that provide accurate, comprehensive, holistic information about a patient's wellness; and appropriate methods will be selected to present the information in such a way that clinicians and patients have the necessary knowledge to improve patients' wellness. The study will identify an appropriate instrument to be incorporated into the dashboard. That instrument will provide the information that will be used to test the presentation method (the intervention to be tested later). The current study is aimed at transforming wellness data into structured information with a future long-term goal of seeking to transform structured information into actionable knowledge for clinicians.

Outcome: The Data-to-Information-to-Knowledge Continuum

A datum represents a fact or statement of event without relation to other things (Bekenstein, 2003).

Data can be defined as a set of facts or figures gathered from the accurate measurement of key

variables involved in a process that generates an outcome. Information theories have traditionally described the transition from data to information as similar to cognitive psychology's understanding of perception as a transition from sensory input to represented patterns (Bekenstein, 2003). In health care, it is important to know what data to gather, at what frequency, and to what level of accuracy. Because data collection related to health status can be costly, time consuming and, at times, intrusive, ways of efficiently collecting accurate wellness data have been the focus of considerable research (to be described later in this chapter).

The meaning assigned to raw data elements depends on a person's background knowledge and the context in which the data are presented (Senay & Ignatius, 1994). Once context is added to the data, attribution of meaning is gained by associating it with a known memory (Englehardt & Nelson, 2002). Then, data become information. For example, when a clinician sees the word "emotional," there is a tendency to form immediate associations with previous contexts within which the clinician has found "emotional" to be meaningful. This might be, "emotional anxiety," "emotional intelligence," "emotional abuse," etc. The implication is that when there is no context, there is little or no meaning. Information can only become knowledge after careful analysis of trends and relationships and the determination of the factors involved (Chen, 2001). Clinicians can have different understandings of the relations that represent wellness information and different understanding of the patterns that represent wellness knowledge. The sequence of data to information to knowledge represents an emergent continuum. Progress along the continuum takes place, not as discrete episodes, but rather it depends upon the individual's baseline knowledge and his or her ability to integrate the data into information (Ackoff, 1989; Bellinger, Castro, & Mills, 2004).

Operationalization of the Data-to-Information-to-Knowledge Continuum

This research is aimed at transforming data about soldiers' wellness, first into information, then into knowledge and evaluating each level in the study (Figure 1).

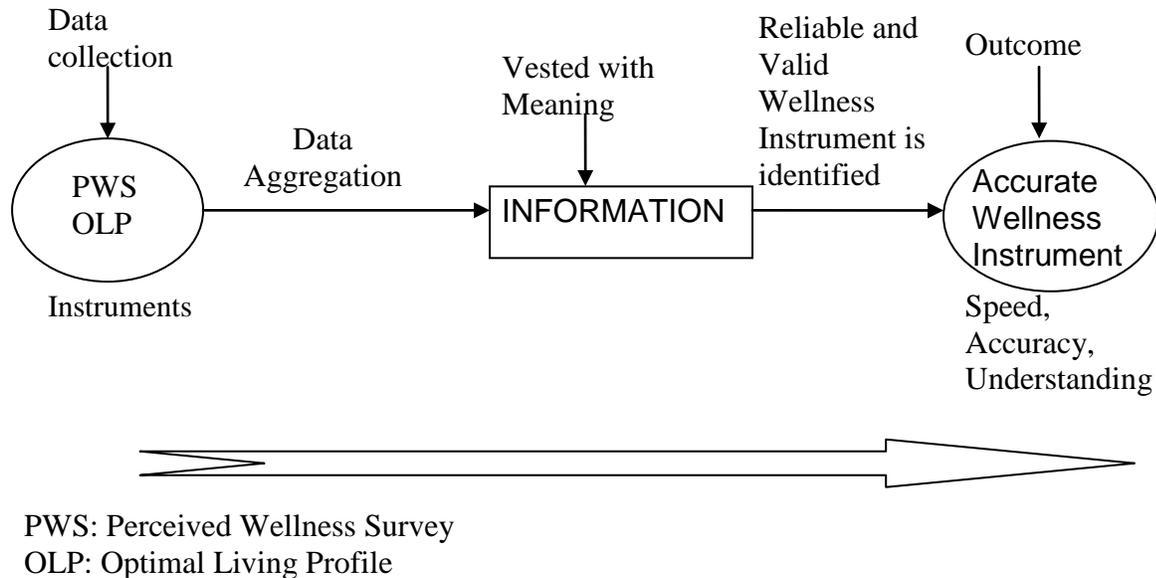


FIGURE 1: Operationalization of the data-to-information-to-knowledge continuum. Adapted from IROM (Effken, 2002)

Initially wellness data will be gathered via two instruments. The data at this point are essentially uninterpreted symbols (Spek & Spijkervet, 1997).

The first arrow represents the aggregation of data about an individual soldier's wellness as collected by the two instruments based on two different holistic models of wellness. Thus, the data collected at level one will be organized and synthesized via a holistic wellness model to move along the continuum from the data to information. At this stage the data are assumed to be structured so that they provide meaningful information (Choo, Detlor, & Trumbull, 2000). However, the information is presented alphanumerically only.

The best data presentation format should facilitate pattern recognition that provides a high level of predictability as to what is described or what will happen next (Bellinger, Castro, & Mills, 2004). In sum, the clinician's knowledge of the patient's wellness status should be enhanced when data are transformed into information and the information is presented in ways that exploit human perceptual capabilities (Englehardt & Nelson, 2002).

Review of the Literature

Holistic Views of Wellness

Wellness has been a well-researched construct in medicine and psychology for over forty years. This has given rise to a great diversity of definitions of wellness (Fraillon, 2004). Many promoters of wellness have either created their own definition or modified an already established definition of wellness. These definitions of wellness provide a useful guide to understanding holistic wellness (Ardell, 1994).

Definitions of wellness in the literature share certain common features: the key importance of lifestyle, a self-responsibility for wellness (Ardell, 1977; Chandler et al., 1992; DOD, 2001; Myers et al., 1998), the multi-dimensionality of wellness (Ardell, 1977; Adams, Bezner, Garner, et al., 1998; Chandler et al., 1992; Crose et al., 1992; DOD, 2001; Dunn, 1967; Hettler, 1984; Myers et al., 1998; Travis, 1975; Sweeney & Witmer, 1992), and the idea of individual development for a better quality of life. Also noted in most of the concept definitions of wellness is the element of individual action and responsibility. It is expected that wellness is something that people actively pursue (Ardell, 1982; Chandler et al., 1992; Dunn, 1967; Sweeney & Witmer, 1992). Emotional, physical, and spiritual dimensions can be found in the majority of wellness definitions; whereas the intellectual and the occupational dimensions are not found consistently (Chandler et al., 1992; Crose et al., 1992; Myers et al., 1998). Finally, wellness from a holistic perspective is viewed as a

state of high functioning featuring body, mind and spirit harmony and context as fundamental elements.

TABLE 1. *Summary of Multi-dimensional Wellness Concepts*

Authors & Instruments	Concept of Wellness	Dimensions
Dunn (1959, p. 786)	Dynamic striving "inherent in individuals that drives them to achieve their highest potential"	Personal Responsibility and Environmental Awareness
Travis & Ryan (1975)	There is a constant exchange of energy between the dimensions of the individual and the environment	Death, Disability, Symptoms, Signs, Awareness, Education, Growth, and High-Level Wellness
Ardell (1977)	Personal lifestyle (self-responsibility) can improve well-being, and lifestyle choices can increase or decrease our levels of wellness	Self-Responsibility, Nutritional, Environmental, Stress Management, Physical Fitness
Hettler (1984), National Wellness Survey	While recognizing the individual as an indivisible entity, clinicians must focus on all aspects of the individual's life	Physical, Occupational, Intellectual, Social, Emotional, and Spiritual
Sweeney & Witmer (1992)	Optimum health and wellness is the ultimate goal and striving of humankind	Spirituality, Self-Direction, Work, Leisure, Friendship, and Love
Chandler, Holden, & Koelander (1992)	Spirituality is inherent in each dimension as well as a willingness to seek meaning of spiritual wellness	Spiritual, Social, Emotional, Physical, Intellectual and Occupational
Cruse, Nicholas, Gobble, & Frank (1992)	Optimal health emphasizes cybernetics (communication and control processes in biological systems) as the state of the living, human system with feedback loops through every dimension	Physical, Emotional, Social, Vocational, Spiritual, Intellectual
Adams et al. (1998), Perceived Wellness Survey	Wellness perception is both multidimensional and salutogenic (health oriented) within an integrated systems framework	Physical, Spiritual, Intellectual, Psychological, Social, Emotional
Myers, Sweeney, & Witmer (1998), Wellness Evaluation of Lifestyle	Holistic function and management of life leads to wellness	Work and Leisure, Friendship, Love, Self-Direction
Department of Defense (2001)	Wellness is a personal state and individuals must develop a strong self-concept and self-reliance in order to experience wellness.	Physical, Material, Mental, and Spiritual

In contrast to the multitude of wellness definitions available, only a few holistic models of wellness exist. Sweeney and Witmer (1992) described wellness as an observable and measurable construct. Under that view, the development of an instrument to measure holistic wellness is possible. However, the instrument will be a valid and reliable method of assessing wellness only if based on sound scientific techniques (Corbin, Lindsey, & Welk, 2002) and a theoretical model (Myers, Leucht, & Sweeney, 2004). Models of wellness typically include an overarching definition articulated by a set of dimensions. The dimensions form broad substantive categories that are comprised of sub-dimensions (Myers, Sweeney, Witmer, 1998). Because wellness is multidimensional, it is necessary to develop instruments for measuring each dimension and sub-dimension.

Today's ideas of holistic wellness were inspired by the World Health Organization's definition of health as a "state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity" (Hettler, 1980). Dunn first used the term "wellness" in a 1961 booklet entitled "High Level Wellness" (Ardell, 1986). Dunn added momentum to the evolution of the holistic conceptualization and definition of wellness with the introduction of wellness as an individual's inherent "dynamic striving" to achieve his/her highest potential and a disciplined commitment to personal mastery (Seligman & Csikszentmihalyi, 2000). Dunn elaborated on a philosophy that was, from the start, multidimensional, centered on personal responsibility and environmental awareness. This shift in focus was from a strictly pathological model to a focus on individual wellness as multidimensional and dynamic within an open holistic system.

Several models have been developed that examine wellness from a holistic view, the earliest based on expanded medical models (Ardell, 1977; Hettler, 1984; Rosenstock, 1960; Travis, 1975) and the most recent reflecting correlates of psychological well-being identified through the

counseling and psychology health professions (Myers et al., 1998; Seligman & Csikszentmihalyi, 2002). The models typically describe the significant relationships among some or all of the following dimensions of wellness: spiritual, emotional, intellectual, environmental, physical, and occupational (Hettler, 1984; Myers et al., 2000; Sweeney & Witmer, 1992).

Assumptions of Holistic Models of Wellness

Although no wellness model is identical to another, the models frequently share four common assumptions: (1) wellness is a combined (holistic) function of body-mind-spirit interrelationships that together are the basis for understanding human wellness; (2) humans are understood as open systems; (3) humans are in a dynamic state of being; and (4) humans internally strive towards a state of wellness (Adams, Bezner, Garner, et al., 1998; Hettler, 1984; Myers et al., 1998; Prigogine & George, 1983; Sweeney & Witmer, 1992, 2004).

A number of models have been proposed that define and understand human wellness in a holistic, multi-dimensional and dynamic view (Adams, Bezner, Garner, et al., 1998; DOD, 2001; Hettler, 1984; Sweeney & Witmer, 1992). Each of these models incorporates a multidimensional view of patient wellness (Savoline & Granello, 2002). The models that guided this research will be described here.

The National Wellness Institute Model

Hettler (1984) developed the National Wellness Institute (NWI) Model, the first holistic model to describe balance among its dimensions of wellness. No one dimension is more important than another, and change in any of the dimensions is through dynamism (dissipative energy), although it is not evident in the model (Hettler, 1984). Supporting the dynamism and holism of the NWI model is Prigogine's (1983) theory of dissipative systems, which views individuals as open energy systems. In dissipative systems, energy is taken into the system (transformed) and then

returned (dissipated) to the environment (Wheatley, 1999). Dynamism in wellness can be utilized at any point on the continuum to help patients move toward or away from higher levels of wellness (Travis, 1975); and the notion of dissipation is integral to understanding holistic wellness because of the constant exchange of energy between the dimensions of the individual and the environment (Travis, 1975). Hettler's model includes operational definitions of the six wellness dimensions: emotional, intellectual, occupational, physical, social, and spiritual (Hettler, 1986). The six dimensions are depicted in equal and pie-shaped segments of a circle.

The emotional dimension recognizes awareness and acceptance of one's feelings and the importance of positive feeling towards oneself and life. It also stresses the importance of managing personal feelings and behaviors dependent on individual strengths and weaknesses. The emotionally well person maintains satisfying relationships with others.

The intellectual dimension recognizes one's creative center, and involves choosing activities to stimulate different centers of the brain. An intellectually well person continues to seek knowledge and skills beyond the classroom and is willing to share information with others.

The occupational dimension is the preparation for work in which one will gain personal satisfaction and find enrichment in one's life through work. Attitude about work drives the positive or negative development of the occupational dimension.

The physical dimension encourages regular physical activity to achieve cardiovascular fitness. It recognizes the achievement of wellness through exercise and balance and discourages the use of tobacco, drugs, and excessive alcohol consumption. It encourages consumption and activities that contribute to overall wellness.

The social dimension encourages personal contribution to the community, emphasizes the interdependence of the person on the environment and the greater community, and includes the pursuit of harmony in one's family life.

The spiritual dimension involves seeking meaning and purpose in human existence. It centers on a person's religious/philosophical needs and may provide powerful support for values, morals, strength of character, and endurance in difficult and dangerous circumstances.

Hettler's holistic approach, while recognizing the individual as an indivisible entity, also supports the need to focus on all aspects of the individual's life (Hettler, 1984; Sweeney & Witmer, 1992). The six dimensions represent the balance of energy in wellness. This balance can occur because humans are open systems constantly exchanging energy and information with the environment and others. Hettler stresses that individual lives are very complex today. To maintain a healthy balance, all dimensions need attention. Investment of too much energy (dissipation) in one or two of these dimensions will result in a deficit in the other dimensions and decrease overall individual wellness. All dimensions relate to and affect each other. For example, what happens at work often affects what happens at home. The goal of a wellness lifestyle is to strive continually for both a balance between the dimensions and a high level of wellness in each dimension. The Optimal Living Profile is an instrument based on Hettler's model of wellness.

Optimal Living Profile

The Optimal Living Profile (OLP) was developed for Canyon Ranch Health Resort. Established in 1979, Canyon Ranch promotes a program of guidance and teaching by medical specialists in all fields to influence positively the quality of life and wellness of all participants attending its programs. Recognizing the need for a reliable and valid measure of holistic wellness, The University of Arizona Prevention Center was asked by Canyon Ranch to identify an

instrument that could assess their total person concept (TPC) and wellness reflecting Hettler's model.

The OLP was developed based on a literature review and evolved through numerous iterations through a series of subjective and objective assessments via statistical evaluation and clinician appraisals (Renger et al., 2000). The OLP designers sought to encompass a holistic philosophy recognizing the unique potential and ability of individuals with the need for balance in the six dimensions (environmental, emotional, intellectual, physical, social, and spiritual) of wellness (Hettler, 1984; Renger et al., 2000).

Wheel of Wellness

Understanding and eventually measuring individual wellness in counseling led Sweeney and Witmer (1992) to design the Wheel of Wellness Model (WOW). This model provided an alternative view from more common diagnostic tools used in counseling that only identified negative and dysfunctional dimensions of a patient (Myers et al., 2000). The WOW is a multi-dimensional and circular model used to explain both the characteristics of healthy functioning and the nature of the relationships among those characteristics. Myers et al. (1998) hypothesized the relationships among sixteen characteristics associated with wellness. In an extensive literature review, Myers et al. (2000) concluded that existing theoretical and empirical literature supports each of the characteristics of wellness included in the WOW model.

The main components of the WOW are based on Adler's theory of individual psychology and include the major life tasks of work, friendship, and love. Spirit and self are also core components based on Adlerian theory (Sweeney, 2004). In fact, spirituality is depicted in the WOW model as the central characteristic of well persons and as essential in all other areas. Furthermore, the twelve tasks of self-direction (sense of worth, sense of control, realistic beliefs,

emotional awareness and management, problem solving and creativity, sense of humor, nutrition, exercise, self-care, stress management, gender identity, and cultural identity) are conceptualized as functioning similar to “spokes in a wheel,” providing self direction to meet the Adlerian major life tasks of work, friendship, love, and spirituality (Myers & Sweeney, 2004).

The WOW model incorporates a contextual framework recognizing the many interacting dynamics in the environment and society that can affect holistic functioning of the individual (Douthi, 2006). These forces include family, community, government, media, business and industry, education, and religion. Wellness is conceived of as a way of life oriented toward optimal health and well-being in which body, mind, and spirit are integrated in a purposeful manner (Myers et al., 2000). Differing from other models is the introduction of spirituality as the wellness core that is central to individuals and provides the energy to drive the patient to seek wellness. Also unique to the WOW are the multiple sub-dimensions that interact in an individual. For each wellness dimension the model postulates a spiritual and a personal component. These two components together provide a rationale to explain why individuals might wish to achieve a wellness lifestyle (Sweeney & Witmer, 1992). Willingness to seek meaning is described as an element of spiritual wellness (Sweeney & Witmer, 1992). Multiple research studies to understand individual wellness have been based on the WOW model. The Wellness Evaluation of Lifestyle is an instrument based on the WOW model.

Wellness Evaluation of Lifestyle

The WEL is a holistic wellness measure presently used as an adjunct to counseling. The WEL is based on the WOW model (Witmer & Sweeney, 1992), which, as noted earlier, applies Adlerian concepts of social interest and striving with a focus on viewing the person as an integrated “whole” (Adler, 1954; Sweeney, 2004).

The WOW model is built on five "life-task" categories (Spirituality, Self-Direction, Work and Leisure, Friendship, and Love) that are viewed as necessary to wellness (Witmer & Sweeney, 1992). The life tasks are further separated into a total of 16 subscales (Spirituality, Sense of Worth, Sense of Control, Realistic Beliefs, Emotional Responsiveness, Intellectual Stimulation, Sense of Humor, Exercise, Nutrition, Self-Care, Gender Identity, Cultural Identity, Stress Management, Work and Leisure, Friendship, and Love) (Sweeney, 2004). The WEL inventory (Myers et al., 1998) was developed to assess each of the individual characteristics in the WOW model. The model was disassembled to form 17 measurement constructs, one for each of the components within the four inner circles of the wheel (Myers et al., 1998). The originally combined life task of work and leisure was further divided based on preliminary factor analyses to form two separate constructs, thus resulting in 17 measured constructs, one corresponding to each of the individual components in the WOW model.

The WEL was developed and pilot-tested as an iterative process. A series of seven studies were conducted over a ten-year period to field test items and to improve the psychometric properties of the reported scales (Hattie, Myers, & Sweeney, 2004; Myers et al., 1998). The instrument is a structured, self-administered questionnaire of 131 items generated as self-statements with test time completion by respondents of approximately 25 minutes. The most recent version (WEL-S) includes 120 items scored on a 5-point Likert-type scale. Scores are simple sums of responses divided by the total points possible; thus scores represent "percent of total wellness."

The instrument has undergone systematic psychometric evaluation over the past nine years, resulting in two new iterations of the WEL called the Five Factor WEL (5F WEL) (Myers, Luecht & Sweeney, 2004) and the Indivisible Self WEL (IS WEL) (Myers, 2004). Presently, the original WEL is the only instrument with scoring available to the public. The WEL has been applied to

study the correlates of wellness and ethnic identity and acculturation in a variety of populations: Native Americans (Garrett, 1999), Korean Americans (Chang & Myers, 2003), African Americans (Spurgeon & Myers, 2002), adult gay males (Dew, Myers, & Wightman, 2003), and mid-life lesbians (Degges-White, Myers, Adlman, & Pastoor 2003).

The Perceived Wellness Model

Adams et al. (1998) built the Perceived Wellness Model (PWM) on the construct of wellness defined as both multidimensional and salutogenic (health seeking) within an integrated systems framework. For the multidimensional aspect of the PWM, Adams (1995) defined wellness as a “manner of living that permits the experience of consistent, balanced growth in the physical, spiritual, psychological, social, emotional, and intellectual dimensions of human existence” (p. 15). The six dimensions in this model are consistent with a holistic wellness perspective integrating aspects of the body, mind, and spirit. These or similar dimensions exist in the majority of wellness models (e.g., Chandler et al., 1992; Hettler, 1984; Witmer & Sweeney, 1992), although the underlying theoretical framework and emphasis on behavior change theory distinguishes the PWM from other models of wellness.

The PWM represents various degrees of wellness and illness as a cone-shaped object. Wellness is displayed at the widest expansion of the PWM, whereas the tightly constricted bottom represents illness. Wellness in all dimensions, at the top of the model, is depicted as boundless and increasing independence to individuals. The distal narrow part of the cone represents illness that constricts or limits individual independence. In between are innumerable combinations of wellness that demonstrate the various states of balance among them (Adams, Bezner, Garner, et al., 1998). Change in any dimension affects the other dimensions. Increasing wellness in one dimension has a

positive ripple effect on the other dimensions, and similarly, disease or illness will cause a rippling negative effect on the other dimensions.

Distinctive to the PWM is the inclusion of behavior change as one of its underlying theories. This model makes it clear that: 1) general health perceptions are among the best predictors of numerous health outcomes; and 2) nearly every behavior change theory in use today employs perceived constructs, the idea being that if you can change perceptions, you can change attitudes and ultimately behaviors (Adams et al., 2000). The Perceived Wellness Scale is based on the PWM.

Perceived Wellness Scale

The PWS (Adams, Bezner, & Steinhardt, 1998) was developed for use in clinical settings as a research tool and designed using systems, wellness, and cognitive theories as its theoretical underpinnings. Perceived wellness, according to its authors, is defined as a multidimensional, salutogenic (i.e., health seeking) construct, which is best understood through an integrated systems view. An assumption of the PWS is that it collects evidence supporting the belief that the mind and the body reciprocally interact to influence overall wellness (Adams, Bezner, & Steinhardt, 1998; Degges-White, Myers, Adelman, & Pastoor, 2003). In the past, research measuring the perceptions of patients had been conducted using a single item measure of holistic wellness (Idler & Kasl, 1991; Kaplan & Camacho, 1983; Reed, 1992). The PWS sets out to represent, integrate and measure holistic wellness concepts through the perceptions of individuals (Adams et al., 2000) and is a multi-faceted measure of perceived health. Population testing with the PWS has been limited to students and employees living in the same region. However, the brevity and simplicity of the PWS may increase its use in clinical practice and further testing in research.

Army Well Being Model

Recognizing the importance of wellness in individual soldiers, the U.S. Army War College was directed to conduct a comprehensive study to define wellness and its concepts. The results of the study defined wellness from a holistic system's view; wellness is a multidimensional state that occurs in the soldier through integrated individual programs and policies (DOD, 2001). Further, the philosophy of Army wellness states that self-concept and self-reliance in individuals must be developed to experience wellness.

Wellness is understood through four basic dimensions in the Army Well-Being Model. A closed outer circle contains the four overlapping equal dimensions of physical, material, spiritual, and mental with Well-Being (wellness) at the center of the model. The physical dimension focuses on individual health and sense of wellness; which is accomplished by satisfying physical needs through a healthy lifestyle. This allows the soldier to meet the demands of military daily life and to resist disease associated with inactivity. The Army's second dimension, the material state, centers on essential needs such as shelter, food, and financial resources. To achieve and maintain good physical fitness, people should eat a balanced diet. Although the basic material needs are required to survive, financial resources are necessary to live life and not just exist in it. Financial security supports both resources and a productive, healthy lifestyle in the individual and the family (DOD, 2001).

The mental dimension centers on individual needs to learn, grow, achieve recognition, and be accepted by others. Further, mental wellness is described as the individual's ability to negotiate the daily challenges and social interactions of life, without experiencing undue emotional or behavioral incapacity. Mental wellness can be affected by numerous factors ranging from stress to diseases and, more recently, multiple combat deployments. Deployments have had an adverse

effect on wellness, particularly mental health in the form of post-traumatic stress disorder. The DOD (2001) found that the spiritual dimension may provide powerful support values, morals, strength of character, and endurance in difficult and dangerous circumstances. The spiritual dimension of the Army Well-Being Model centers on a person’s religious and philosophical needs.

A review of the holistic wellness models in Table 2 shows a general assumption that in striving for wellness there is a unique process of integrating different personal strengths and interests in ways that maximize individuals' potentials within their social environments (Ardell, 1977; DOD, 2001; Myers et al., 2000; Sweeney & Witmer, 1992). Wellness models, however, also tend to emphasize the holistic nature of the concept, positing it as an integrated and balanced functioning of an individual's body, mind, and spirit (Adams, Bezner, & Steinhardt, 1998; Ardell, 1977; Hettler, 1984; Myers et al., 1998; Sweeney & Witmer, 1992). The highly individualized and multifaceted nature of wellness presents challenges to operationalizing this concept in ways that promote scientific inquiry and assist the clinician in transforming data to information to knowledge.

TABLE 2. *Summary of Wellness Models*

Models, Instruments	Theoretical Basis and Assumption	Simple, but Generalizable?	Basis for Hypothesis	Increases Knowledge?
Wheel of Wellness (Sweeney & Whitmer, 1992) Instrument: <i>Wellness Evaluation of Lifestyle</i>	Individual Adlerian Psychology Theory, Dissipation Theory: Spirituality is at the core of wellness and drives the other dimensions	No, complex. the current seventeen 5F-WEL subscales can be difficult to manage in a research study	Wellness is expressed through five life tasks, each further divided into sub-categories.	Yes, a wide range of factors contribute to holistic wellness and its many characteristics
Perceived Wellness Model (Adams, Bezner, Garner, et al., 1998) Instrument: <i>Perceived Wellness Survey</i>	Systems and Behavior Change Theory: Holism is the foundation of human wellness	Yes, a simple but highly generalizable model	Body, mind, and spirit are integrated in a purposeful manner.	Yes, emphasis is on the perceptions of the individual.

TABLE 2. *Continued*

Total Person Concept Model (Renger, 2000) Instrument: <i>Optimal Living Profile</i>	Holistic Theory Dissipation Theory: Humans cannot be analyzed by reducing them to their component parts; that destroys the integrity of the whole	Yes, but most useful in primary care and the public health arena	No one dimension is more important than another.	Yes, an operational definition of wellness is given by identifying the six dimensions of the wellness construct
Army Well Being Model (DOD, 2001) No instrument	Systems Theory: Self-concept and Self-reliance within humans must be developed for the experience of wellness.	Yes, highly abstract model	A holistic approach within a systems framework is the path to wellness.	Yes, identifies personal growth as an indicator of wellness

Summary

Chapter 2 described the IROM conceptual framework and the operationalization of the Data-to-Information-to-Knowledge continuum for this study. Concepts of wellness and holistic models of wellness since the 1960s were presented. The review of the wellness literature synthesized the current definitions and models of wellness in research relevant to the development of wellness instruments derived from those models to measure wellness.

CHAPTER 3: METHODOLOGY

Introduction

Although a variety of instruments have been developed that purport to measure wellness holistically, to date there has not been a great deal of research testing the instruments across settings. Therefore, this study evaluated, in a military population, the psychometrics of two instruments originally developed to measure wellness holistically in non-military populations. Chapter 3 describes the methods to be used to answer the research questions posed in Chapter 1.

Question 1: *What currently available holistic wellness instrument can be used to provide a reliable measure of a soldier's wellness?* To answer this general question, the following more specific questions were addressed:

- a. What is the internal consistency of the Perceived Wellness Survey in a soldier population?
- b. What is the internal consistency of the Optimal Living Profile in a soldier population?

Question 2: *What currently available holistic wellness instrument can be used to provide a valid measure of a soldier's wellness?* To answer this general question, the following more specific questions were addressed:

- a. What is the construct (convergent) validity of the Perceived Wellness Survey and the Wellness Evaluation of Lifestyle in a soldier population?
- b. What is the construct (convergent) validity of the Optimal Living Profile and the Wellness Evaluation of Lifestyle in a soldier population?

Question 3: *What currently available holistic wellness instrument can be used to provide a useful measure of a soldier's wellness?* To answer this general question, the following more specific questions were addressed:

- a. What is the usefulness of the Perceived Wellness Survey in a soldier population?
- b. What is the usefulness of the Optimal Living Profile in a soldier population?

Setting and Sample

The United States Military Academy at West Point, New York was used for subject recruitment. Eligible participants were USMA Cadets, 17 years of age or older, and on active duty (AD) with assignment as a new Cadet (Class of 2013) at that military post. This Cadet class included a total of 312 (excluding Internationals) minority cadets (23% of the class) with gender and ethnic backgrounds as follows in Table 3.

TABLE 3: *USMA Cadet Class Demographics*

Category	Total	Percent
Men	1091	79.7%
Women	277	20.3%
Non-Minority	1045	77.0%
Hispanic	129	9.5%
Asian Pacific Islander	90	6.6%
African American	81	6.0%
Native American	12	0.9%

The table above represents the complete class (n=1368) of USMA 2013. 1368 Cadets at West Point received an invitation for this study. The sample size was planned for a ratio of five subjects to item (Gorsuch, 1997) to facilitate factor analysis of the longest instrument, the 135-item *Optimal Living Profile* (OLP). The subjects-to-variables ratio should be no lower than 5 to 1 (Bryant & Yarnold, 1995; Gorsuch, 1983, [MacCallum, Widaman, Zhang, & Hong, 1999]). Gorsuch (1983) and Hatcher (1994) recommended a minimum subject-to-item ratio of at least 5:1 in EFA, and state that in repeat studies this is an effective ratio. There is a widely-cited rule of thumb from Nunnally (1978) that the subject-to-item ratio for exploratory factor analysis should be at least 10:1, but that recommendation is not supported by published research. There is no one ratio that will work in all cases; the number of items per factor, commonalities, and item-loading

magnitudes can make any particular ratio overkill or hopelessly insufficient (MacCallum, Widaman, Preacher, & Hong, 2001).

All first year Cadets take an Introduction to Psychology class during their first semester. As part of the requirement to pass the course, all Cadets must either participate in a study or write a research paper. Demographic data will not be collected on the participants so the specific age, gender, and ethnicity breakdown will not be known.

Permission to recruit soldiers was obtained from the command of the USMA. After Institutional Review Board approval by the University of Arizona, the command center at the U.S. Army post endorsed this research study and sent out information to the West Point server on how to be a volunteer participant in the study. Volunteer subjects logged onto a secure web server called SurveyMonkey and were randomly assigned to one of three groups based on the last digit of their social security number (Table 4). Web-based surveys have recorded response rates exceeding 70% due to: 1) respondent cohesiveness (e.g. an existing workgroup); 2) ease of electronic survey; and 3) prenotification (Koffman, 1998). Research has demonstrated that soldiers are bonded together by common goals and social and organization controls that lead to high cohesiveness within the group (Siebold, 1999). Further, electronic surveys are quick to complete, and soldiers have Internet access at multiple sites across each post. Finally, the West Point command endorsement, multi-step invitation process and electronic survey presentation, as well as built-in system reminders, and subject recruitments (Appendix E) were sent one week and one day prior to the study.

Design

The psychometrics of two wellness instruments were investigated: the *Optimal Living Profile* (OLP) and the *Perceived Wellness Survey* (PWS). The *Wellness Evaluation of Lifestyle*

(WEL) was used to measure convergent validity of the two instruments. Table 4 depicts the design of the study.

TABLE 4. *Research Design*

Design		Time 1 (T1)			Time (T2)		
Instrument		OLP	PWS	OLP	PWS		WEL
Group	<i>N</i>			Internal Consistency	Retest		Convergent
1	327	√	√	√	√		
2	187	√	√				
3	254	√	√				√

The sample of 768 cadets was divided into three different groups, each put into their groups by the last digit of their social security number. Internal consistency of the instruments was measured using the total group ($n = 768$). Internal consistency of the instruments was assessed using Group 1 ($n = 327$), and convergent validity was assessed using Group 3 ($n = 254$). The *Beck Depression Inventory* (BDI) was planned for use with Group 2 ($n = 187$) as a test of Divergent Validity. The most widely used measure of depression, the BDI is a 21-item, self-administered test designed to assess an individual's intensity of depression. It is primarily used as a screening tool. In 1996, the BDI was revised to comply with the DSM-IV criteria for depression; the new version is called the BDI II (Musawi, 2001). The 21 symptom-attitude categories for the BDI measure mood, pessimism, sense of failure, lack of satisfaction, guilt feelings, sense of punishment, self-dislike, self-accusation, suicidal wishes, crying, irritability, social withdrawal, indecisiveness, distortion of body image, work inhibition, sleep disturbance, fatigability, loss of appetite, weight loss, somatic preoccupation, and loss of libido (Yeoung et al., 2002).

The scale strength of the BDI II is excellent. It is easy to administer, and applicable to a wide range of populations. It has excellent construct validity. In fact, researchers evaluate the

validity of new scales based on the BDI. However, on review of the instrument for this study, the Beck Depression Inventory was found to measure some of the same constructs of wellness as the OLP and PWS. Therefore, only data collected from group 2 in T1 was applicable to this study and divergent validity was not assessed.

At T1, each of the three groups completed the OLP and PWS instruments to test the agreement of content coverage within the OLP and PWS among the three groups of soldiers. All Cadet participants were directed to indicate the last digit of their social security number (SSN) at T1 and were placed in one of three groups based on this: Group 1 with SSNs ending in 0-3; Group 2 with SSNs ending in 4-6; and Group 3 with SSNs ending in 7-9). This first measurement (T1) was done on September 16, 2009. The second measurement (T2) was done three days later. The three-day time period between the two measurements for Group 1 was judged appropriate because the PWS and OLP together include 171 items. As a result, it was unlikely that soldiers would remember answers to these items from one time to the next. A review of multiple studies has found that test-retest time intervals from one to 35 days had reliability coefficients that ranged from .83 to .97, while test-retest time intervals of two to four weeks showed reliability coefficients of .78 to .98 (Koffman, 2006).

At T2, the Cadets were assigned by their SSN either to the same instruments with Group 1 test/retest with the OLP and PWS, Group 2 did not participate in the second testing due to a lack of an instrument to test discriminant validity, and Group 3 took the WEL. Data from Group 1 ($n=327$) were used to assess the internal consistency of the wellness scores of the OLP and PWS when measured at two points in time (test/retest reliability). The WEL was used to test the convergent validity of the OLP and PWS in Group 3 ($n=254$).

Confidentiality was protected in this study by explicitly not asking for identifying information or by recording personal identifiers separately from the research data. In research of online behavior, participant anonymity is difficult because the Internet Protocol (IP) address is tied to the user at that time. The IP address is an exclusive number for information devices (computers, printers, faxes) that identifies and allows devices the ability to communicate with each other over a computer network (Srisuresh & Egevang, 2001). Recording the IP address of participants in this study was part of the agreement for IRB approval. The IRB requirement insured that all participants in the study were kept safe and could be contacted if there were any indication of a wellness concern.

Survey Monkey records the time and IP address of each respondent to a survey. It was unforeseen that West Point, USMA (part of the DOD) deliberately scrambles the IP addresses to maintain the integrity of their computer systems. Due to this security on their USMA server, SurveyMonkey recorded (n=768) identical IP addresses and it appeared that all the data was from one participant.

Exploratory Factor Analysis was done to determine the validity of the PWS and OLP. Factor analysis tested the hypothesis that the identified variables of holistic wellness are indeed measured constructs in the PWS and OLP. Also, face validity was accomplished by comparing the individual questions to the different dimensions of the multidimensional Army holistic wellness model. This would indicate that the PWS or OLP may be a reasonable way in which to measure wellness in the Soldier population.

Instrumentation

Instruments for measuring wellness holistically were selected based on Strickland and Dilorio's (2003) criteria. Strickland and Dilorio (2003) outlined evaluation criteria for instruments

that prioritized the instrument's theoretical underpinnings, psychometric properties, and appropriateness for use in a clinical area to the researcher.

First, there must be reference to the instrument's theoretical underpinnings. Second, published information should indicate reliability and validity when used as a measure of holistic wellness. This includes internal consistency; reliability with a Cronbach's Alpha above 0.70, given a reasonable sample size and appropriate testing; as well as some form of construct validity (Steiner & Norman, 1989). Third, the instrument must contain multiple items to measure holistic wellness, but not necessarily multiple scales. Fourth, the instrument must be brief enough to limit survey non-response for items at the end of the instrument (Scott & Seecrest, 1993); therefore it should take no longer than 20 minutes or include 140 questions per instrument. These criteria excluded single-item measures used alone or included in other wellness measures such as the Spiritual Distress Scale (McCorkle & Qunit-Benoliel, 1983).

Three instruments met the criteria for psychometric testing in primary care: the PWS, (Adams, Bezner, Garner, et al., 1998), the OLP, (Renger et al., 2000) and the WEL (Myers et al., 1998). However, due to the cost of the WEL to support the sample size of this experiment, the WEL was applied in this study to measure the convergence of the PWS and the OLP. Over the past 15 years, psychometric validation of the WEL instrument has shown good reliability and validity through a series of published defined tests with different population groups measuring holistic wellness, thus making the WEL a strong choice as a convergent measure of the newer PWS and OLP.

There are three requirements for interpreting the results of a measurement instrument: (1) availability of an independent standard or standards; (2) standards that are interpretable (i.e. an intuitive sense of the value placed on different scores or levels in that standard); and (3) standards

that are moderately to highly correlated with the target instrument (Guyatt et al., 2000). The WEL was chosen as the gold standard to use for criterion validity with the PWS and OLP. Kassirer and Kopelman (1991) describe the gold standard instrument as an evidenced-based measurement that shows a construct exists. The WEL (Sweeney, Myers et al, 1991) was one of the most investigated holistic wellness instruments and was included in the psychometric review of wellness instruments.

For many studies, criterion validity is accomplished by using an instrument that has known validity and comparing it with new instruments purporting to measure the same construct (Bech et al., 1992). The WEL has a history of multiple published research studies with resultant sound psychometrics in the counseling area of outpatient clinics. The WEL has been applied to study the correlates of wellness and ethnic identity and acculturation in a variety of populations: Native Americans (Garrett, 1999), Korean Americans (Korean translation; Chang, 2003), African Americans (Spurgeon, 2002), adult gay males (Dew et al., 2003), and mid-life lesbians (Degges-White, 2003). The sustained interest in the scale, questions posed by researchers using the tool, and further research by the tool's developers encourages further psychometric testing. At the time of this study, the WEL appeared to be the best available reference instrument (gold standard) to compare its results against the PWS and OLP.

The description, theoretical underpinnings and variables of interest for the WEL, PWS, and OLP are reviewed in Table 5.

TABLE 5. *Summary of Holistic Wellness Instruments*

Instrument Name and Original Reference	Instrument Description & Construct Measured	Theoretical Underpinnings	Variables
Perceived Wellness Survey (PWS) (Adams et al., 1998)	Paper and pencil measure of perceived wellness based on PWS model includes six subscales of physical, spiritual, intellectual, psychological, social and emotional dimension	Systems, Wellness and Cognitive Theory with an integration of health concepts for conceptualization and measurement of perceived wellness: biological and physiological variables, symptom status, functional status and general health perceptions.	36 items; Likert scoring; Summed scores by sub scales
Wellness Evaluation of Lifestyle (WEL) (Myers et al., 1998).	Paper and pencil measure of wellness based on WOW model. Identifies, assesses each of the 5 life tasks and subtasks (see model) as characteristics of healthy functioning as a major component of wellness	Psychology theory and view of person as a “whole” (Adler, 1954, Sweeney et al., 1998). Proposed holistic model of wellness & prevention over life span based on concepts from psychology, anthropology and sociology	131 items; Likert scoring; Summated scores by sub scales
Optimal Living Profile (OLP) (Renger et al., 2000)	Paper and pencil measure based on TPC and Life Enhancement Program (LEP). Focus is on self discovery, preventive care and developing lifelong healthy lifestyle habits this includes measurement of intellectual, emotional, social, spiritual, physical as well as environmental health.	Hettler’s six dimensional model integrated with Canyon Ranch Total Person Concept (TPC)	135 items; Likert Scale; Summated scores by sub scales

Comparison of Wellness Instruments’ Psychometrics

A summary of the psychometrics of the PWS, OLP and WEL are shown in Table 6.

The Perceived Wellness Scale. The *Perceived Wellness Scale* (PWS) is a 36-item instrument measuring perceptions of wellness in each of six separate dimensions (physical, spiritual, psychological, social, emotional, and intellectual). Each dimension is represented by six items (Adams, Bezner, & Steinhardt, 1998). Responses to the items are scored on a 6-point Likert

scale ranging from "very strongly disagree" to "very strongly agree" (indicating greater wellness). The instrument was designed to be administered either by self-report or by interview. The instrument was developed to be readily comprehensible and takes less than 30 minutes to complete.

The PWS is obtained by dividing the mean totals by the standard deviation of each of the six dimensions plus a constant. Higher scores indicate greater wellness, with a possible range of scores from 3 to 29. The PWS is recommended (Bezner, Adams, & Whistler, 1999) for use as a perceptual health variable in combination with other well established indicators of wellness. Its developmental history and psychometric evaluation are chronicled in a series of publications (Adams, Bezner, & Steinhardt, 1998; Adams, Bezner, Garner, et al., 1998; Bezner & Adams, 1999; Bezner & Hunter, 2001). Overall, the PWS has been determined to be a psychometrically sound measure of wellness

Optimal Living Profile. The *Optimal Living Profile* (OLP) is a 131-item instrument that includes six wellness dimensions (environmental, emotional, intellectual, physical, social, and spiritual) (Hettler, 1984; Renger et al., 2000). Responses to the items are scored on a 5-point Likert scale ranging from "very strongly disagree" to "very strongly agree" (indicating greater wellness). The instrument was designed to be administered either by self-report or by interview. Completion of the instrument electronically takes 15 to 20 minutes, and it was developed to be readily comprehensible. The OLP score is obtained by dividing the mean totals by the standard deviation of each of the six dimensions plus a constant. The OLP has been applied in one published study to one population in Arizona; it was determined that the instrument was both valid and reliable in this study. This instrument was chosen for testing in the current study because it is easily accessible to

the public, it was designed for use in primary care, it has an easy self reporting format, and the items are sufficiently broad so as to be applicable to other populations.

Convergent measure: Wellness Evaluation of Lifestyle. The WEL is a 135-item instrument. Responses to the items are scored on a 5-point Likert scale ranging from "very strongly disagree" to "very strongly agree" (indicating greater wellness). The WEL has been well tested and has demonstrated consistent reliability (test retest, internal consistency) and validity (content, construct, concurrent). A series of psychometric analyses were performed on the instrument over the past decade including content validity (CVI = .90), construct validity (ANOVA, $p < .05$), concurrent validity ($r = .60$, $p < .05$), factor analysis, and test-retest reliability ($r = .80$). Convergent and divergent validity were investigated by comparing scores on the various WEL scales to similar scales on instruments such as the *Coping Resources Inventory* (Myers, Luecht, & Sweeney, 2004) and *Testwell* (National Wellness Institute, 1983). Hattie, Myers, and Sweeney (2004) and Myers et al. (1998) found that scores measuring conceptually similar constructs had high correlations (convergent validity) and scores measuring different constructs had lower correlations (divergent validity). Although an excellent and research-proven instrument, the WEL is not freely available to the public, which limited its use in this research.

All of the instruments (PWS, OLP, WEL) to be tested are based on a theoretical framework. In addition to factor analysis using the empirical results, psychometric assessment has been undertaken with supportive results for construct and criterion validity as shown in Table 6.

TABLE 6. *Summary of Wellness Instrument Psychometrics*

Perceived Wellness Survey	Sample and Characteristics	Reliability Evidence	Validity Evidence
Adams, Bezner, & Steinhardt (1998)	One study during employees' annual health screening Sample size: $n=558$. Characteristics: composed of 3M employees from multiple sites in Austin, Texas	<i>Internal Consistency:</i> Cronbach's alpha score for total instrument ranged from .88 to .93	Factorial validity supports the underlying perceptual nature of the scale. Factor loading scores ranged from $r=.37$ to $.59$
Adams, Bezner, Garner, et al. (1998).	Six studies over three-year period Sample size: $n=380$, $n=178$, $n=238$, $n=105$, $n=81$, $n=95$ Characteristics: three groups of corporate employees and three groups of students	<i>Internal Consistency:</i> Cronbach's alpha for total instrument ranged from .71 to .93 <i>Test Retest:</i> Procedure in a ten day period <i>Inter Rater Consistency:</i> estimates ranged from $r=.73$ to $r=.81$ somewhat stable	<i>Construct Validity:</i> The highest and lowest perceived wellness groups were significantly different, providing support for the construct validity of PWS.
Bezner & Adams (1999).	One study, over three days Sample size: $n=243$ Characteristics: hospital employees	<i>Internal Consistency:</i> Cronbach's alpha for total instrument = .92	<i>Construct Validity:</i> Greater activity levels associated with higher perceived physical health
Optimal Living Profile	Sample and Characteristics	Reliability Evidence	Validity Evidence
Renger, Midyett, & Soto (2000)	One study Sample size: $n=102$ (test/retest) $n=34$ (Criterion related validity)	<i>Internal Consistency:</i> Cronbach's alpha ranged from .78 to .91 <i>Test-Retest:</i> with a one week interval with $r=.53$ to $.86$	<i>Content Validity:</i> overall content of OLP matched the total person concept (Hettler, 1984). <i>Concurrent Validity:</i> 34 individuals completed the OLP and were interviewed by experts with correlation coefficients between .04 (environmental health) and .78 (spiritual health)

TABLE 6. *Continued*

Wellness Evaluation of Lifestyle	Sample and Characteristics	Reliability Evidence	Validity Evidence
Myers, J. Mobley, K Booth, C. (2004).	Analysis of existing and unexamined database over a five-year period Sample size: $n=1567$ Characteristics: students: 83% traditional age (24 years or younger) and 17% nontraditional age (25 years and older)	<i>Internal Consistency:</i> Cronbach's alpha = .89 for the total wellness factor, second order factor alphas (five dimensions of spirituality, self-direction, work, friendship, and love) ranged from .77 to .87, and third-order factor (16 subscales of the five dimensions) alphas ranged from .60 to .83.	Between group comparisons resulted in numerous statistically significant differences based on age, gender, and ethnicity.
Myers, Luecht & Sweeney (2004)	One study, collected over a two-year period Sample size: $n=179$ Characteristics: West Point cadets	<i>Internal Consistency:</i> Cronbach's alpha scores ranged from .66 to .89 <i>Test Retest Reliability:</i> over a 2-week interval exceeded .75; most exceeded .85	<i>Criterion Related Validity:</i> Correlations were $r = .62$ to $.88$ between the WEL and the Perceived Stress Scale (PSS)
Hermon & Davis (2004)	One study, data timeline collection not available Sample size: $n=155$ Characteristics: 76 traditional college-age students (17-23) and 79 non-traditional college-age students (24-51)	<i>Internal Consistency:</i> Cronbach's alpha for total instrument ranged from .66 to .85	<i>Construct Validity:</i> Overall differences expected between the two groups of students ($t= 347, p<.05$). Non-traditional students engaged in higher levels of self care ($t=2.15, p<.05$) had greater sense of control ($t=1.99, p<.05$) and had more realistic beliefs ($t=2.23, p<.05$).

Psychometric testing methods and criteria. The PWS, OLP, and WEL were tested. The psychometric elements to be examined included reliability and construct validity. Cronbach's alpha was used to measure internal consistency and test-retest correlation coefficients. Alpha levels of 0.80 or greater were considered desirable, with 0.70 or above viewed as adequate. Traditionally, test-retest correlation is recommended to be 0.70 or greater to be considered adequate (Nunnally & Bernstein, 1994).

The OLP and PWS instrument were analyzed for validity using a principle components exploratory factor analysis. This test demonstrated whether the OLP and PWS load constituent corresponding items onto the same factor. It was expected that there would be six factors for each instrument. Construct validity estimates were obtained in three ways: (1) factor analysis; (2) convergent measures of the WEL with the PWS and OLP demonstrating appropriate associations with corresponding theoretical constructs; and (3) face validity with the Army holistic model of wellness. A t-test compared the means of the OLP and PWS.

Data Collection

The wellness instruments were self-administered on a secure web server through SurveyMonkey. A mass electronic mailing was sent by the Officer in charge of first-year Cadets at USMA inviting them to participate in a wellness project. Cadets interested in volunteering for the project were provided a web link (SurveyMonkey) through this electronic mail for an overview of the project as well as a link to the investigator's electronic mailing address. Appendix D presents the electronic script, which gives a brief overview of the project to each Cadet.

Data Management

Raw data from the OLP and PWS were exported into an Excel database that was designed for efficient data entry and retrieval, and that was fully labeled. The OLP and PWS were scored separately. Datasheets were maintained and the originals stored in the central electronic Excel archive secured at Walter Reed Army Medical Center.

The Excel data were then exported to the SPSS statistical software package for analysis. The final database and the database document were archived onto a CD (non-rewriteable) and stored in the central archive, together with hard copy printouts of the data tables. The CD is secured at a Walter Reed Army Medical Center, Washington, D.C. research cell.

Data Analysis

The essential psychometric elements examined were reliability via internal consistency and test/retest, construct validity via factor analysis, and face validity by determining any items from the PWS and OLP that correlate with the Army model. Cronbach's alpha was used to determine internal consistency. Since both the OLP and PWS are new scales, an acceptable Cronbach's alpha was set at .70. Factor analysis of the OLP and PWS was expected to generate as many as six factors for each instrument. The number of significant factors was determined using Kaiser's criterion: those factors having an eigenvalue greater than 1 (Munro et al., 2000). In order to determine usefulness (yield similar results) of the PWS and OLP, the responses were aggregated by dimension, and a t-test was conducted to check for a difference in mean response for each dimension.

Summary

This chapter described the research methods used in testing the questions presented in Chapter 2. It provided a description of the wellness instruments used in the study, a discussion of the reliability and validity of the instruments, the way data were to be collected and analyzed, and the data analysis plan.

CHAPTER 4: RESULTS

Chapter 4 presents the study results. The results are organized into two sections by instrument tested (PWS and OLP). Factor Extractions, Construct Validity and Reliability are discussed for each instrument. The results are presented according to the research questions.

Sample

The total number of participants in this study was 768. Demographic data were not collected on the participants, so the specific age, gender and ethnicity breakdown is not known. The age of the participant sample ranged from 17 to 23 years, which is standard for incoming cadets. It is a requirement that all USMA Cadets graduate by the age of 27 years old; therefore the oldest Cadet in the USMA first year class could be 23 years old.

Data Preparation

PWS and OLP data collected at T1 were investigated for missing values. Thirty records did not contain data for either the PWS or OLP instrument and were removed from analysis. Twenty-nine records were missing data on all items of the PWS instrument and various items of the OLP instrumentation so were also removed from analysis. A total of 59 records were removed from the dataset, with 709 records remaining for analysis.

Many records were missing various items from either the PWS or OLP instrumentation. Pairwise deletion (Pallant, 2005) was used to exclude records only if they were missing the data required for a specific analysis. Records were retained for any of the analyses for which they had the necessary information.

Perceived Wellness Survey (PWS) Psychometrics

Factor Analysis

The 36 items of the *Perceived Wellness Survey* (PWS) were subjected to principal components analysis (PCA) using SPSS version 15.0. Prior to performing the PCA, the suitability of data for factor analysis was assessed. Inspection of the correlation matrix revealed the presence of 27 items with coefficients of 0.3 and above. The Kaiser-Meyer-Olkin value was .95, exceeding the recommended value of .6 (Kaiser, 1970, 1974); and the Bartlett's test of Sphericity (Bartlett, 1954) reached statistical significance, supporting the factorability of the correlation matrix.

Principal Components Analysis (PCA) revealed the presence of six components with eigenvalues exceeding 1, explaining a total of 55.4% of the variance. An inspection of the screeplot revealed a leveling after the fourth component. Using Cattell's (1966) scree test, it was determined that four components would be retained for further investigation. To aid in the interpretation of the four components, Varimax rotation was performed. When loadings less than 0.40 were excluded, the analysis yielded a four-factor solution with a simple structure (factor loadings $\geq .40$). The four components showed a number of strong loadings and all variables loading substantially on only one component. The four-component solution explained a total of 48.6% of the variance, with Component 1 contributing 20.6%, Component 2 contributing 11.3%, Component 3 contributing 8.5%, and Component 4 contributing 8.3% of the variance, respectively.

None of the items on the PWS had a N/A choice within the scale. Nine items were dropped from the factor loading. Items in the factor analysis were chosen for deletion (Costello & Osbourne, 2005) that were less than .40 or dual loadings on an item were within two tenths of a decimal point as shown in Table 7.

TABLE 7. *Factor Analysis Deleted Items from the PWS Instrument*

Survey Item	Statement	Factor Loading	
Sp11	Life does not hold much future promise for me	.456	.453
I12	I avoid activities which require me to concentrate	.333	
E14	I sometimes think I am a worthless individual	.484	.496
So21	My family has been available to support me in the past	.494	.510
E26	I will always be secure with who I am	.518	.424
P28	I expect to always be physically healthy	.482	.552
Sp29	I have felt in the past that my life was meaningless	.543	.470
E32	I have felt sure of myself among strangers	.390	
P34	I expect my physical health to get worse	.512	.410

Note. E=Emotional Dimension; I=Intellectual Dimension; P=Physical Dimension; So=Social Dimension; Sp=Spiritual Dimension

The four factors derived from the PCA were named (a) Multi Dimensional Wellness (MDW), (b) Psychological Wellness (PsyW), (c) Physical Wellness (PW), and (d) Emotional-Social Wellness (ESW). Table 7 presents the items of the PWS associated with each of the four components. Table 8 presents the 27 PWS survey statements according to component and their associated factor loadings. The factor loadings, also called *component loadings* in PCA, are the correlation coefficients between the survey items (rows) and factors (columns). Analogous to Pearson's r , the squared factor loading is the percent of variance in a particular survey item explained by the factor (component).

Fourteen items loaded onto Factor 1. These fourteen items all relate to five of the dimensions (emotional, intellectual, psychological, social, and spiritual) of the PWS. This factor loads onto both positive and negative perceptions of personal wellness such as being optimistic about the future, believing in a purpose in one's life, being optimistic, and being open to learning new things. This factor was labeled, "Multidimensional Wellness."

Six items load onto a second factor. The items which loaded onto the factor called *Psychological wellness* were from three of the dimensions of the PWS (intellectual [1 item], psychological, and social) as indicated in Table 8 below. The Psychological wellness component represents the negative poles of the wellness construct in item development (Adams, Bezner, & Steinhardt, 1998). There were high intercorrelations among these items. A high score on these reversed-scored items measured activities that are not conducive to wellness.

The four items that loaded onto Factor 3 all relate to physical wellness regarding the perceptions of a strong body which resists illness as well as an item measuring a perception of a body with physical limitations. This factor was labeled, “Physical Wellness”. One item (4) is also reversed scored and represents the negative poles of the wellness construct.

The three items that load onto Factor 4 are from the emotional and spiritual dimensions of the PWS. The emotional items represent feeling inferior to others and lacking self confidence, while the social item represents not understanding what life is about. All items are reversed score and represent the negative poles of the wellness construct. This was labeled, “Emotional/Spiritual Wellness.”

TABLE 8. *Factor Loadings of Psychological Wellness*

Survey Item	Statement	Factor Loading
Component 1 – Multidimensional Wellness		
6	I will always seek out activities that challenge me to think and reason.	.732
23	I feel a sense of mission about my future	.718
5	I believe there is a real purpose in my life.	.689
1	I am always optimistic about my future	.675
18	Generally, I feel pleased with the amount of intellectual stimulation I receive in my daily life	.648
30	In the past, I have generally found intellectual challenges to be vital to my overall well-being.	.618
19	In the past, I have expected the best.	.617
8	In general I feel confident about my abilities.	.613
33	My friends will be there for me when I need help.	.594

TABLE 8. *Continued*

Survey Item	Statement	Factor Loading
Component 1 – Multidimensional Wellness - <i>Continued</i>		
35	It seems that my life has always had purpose.	.592
13	I always look on the bright side of things.	.540
3	Members of my family come to me for support.	.537
24	The amount of information that I process in a typical day is just about right for me (i.e., not too much and not too little).	.531
15	My friends know they can always confide in me and ask me for advice.	.529
Component 2 – Psychological Wellness		
9	Sometimes I wonder if my family will really be there for me when I am in need*	.659
25*	In the past, I hardly ever expected things to go my way.	.630
7*	I rarely count on good things happening to me	.515
36	My life has often seemed void of positive mental stimulation.	.510
27*	In the past, I have not always had friends with whom I could share my joys and sorrows.	.503
31*	Things will not work out the way I want them to in the future	.486
Component 3 – Physical Wellness		
4*	My physical health has restricted me in the past.	.670
22	Compared to people I know, my past physical health has been excellent.	.676
16	My physical health is excellent.	.641
10	My body seems to resist physical illness very well.	.630
Component 4 – Emotional Spiritual Wellness		
2	There have been times when I felt inferior to most of the people I knew*	.669
20	I am uncertain about my ability to do things well in the future.*	.664
17	Sometimes I don't understand what life is all about.*	.508

Note. *= reverse coded item

Convergent Validity

A total score was derived from the PWS by summing all 27 response items retained from the factor analysis. Higher scores on the PWS indicate greater perceived wellness. A total of 296 respondents who took the PWS survey at T1 were sent the WEL survey for completion three days later in T2. Higher scores on the WEL instrument indicate greater “wellness.” A total of 254 respondents completed the WEL survey at T2. Table 9 presents the measures of central tendency for the PWS data collected at T1, and the WEL instrumentation data collected at T2. The minimum

scores for each instrument are 27 (PWS) and 131 (WEL) while the maximum scores for each instrument are 216 (PWS) and 655 (WEL).

TABLE 9. *Measures of Central Tendency for the PWS*

Variable	<i>M</i>	<i>mdn</i>	<i>SD</i>	Range
PWS summed score	141.11	143.0	20.43	48 – 182
WEL summed score	406.15	405.0	37.01	235 – 508

Note. *M* = Mean; *mdn* = Median; *SD* = Standard Deviation.

Unfortunately the scores from the PWS survey at T1 and the WEL survey at T2 could not be paired across individuals so it was not possible to determine convergent validity.

Optimal Living Profile (OLP) Psychometrics

Factor Analysis

The 133 items of the Optimal Living Profile (OLP) were subjected to principal components analysis (PCA) using SPSS version 15.0. Prior to performing the PCA, the suitability of data for factor analysis was assessed. Inspection of the correlation matrix for the initial PCA analysis returned a Kaiser-Meyer-Okin value of .894, exceeding the recommended value of .6 (Kaiser, 1970, 1974). Bartlett's test of Sphericity (Bartlett, 1954) reached statistical significance ($p=.04$) on the initial PCA rotation, supporting the factorability of the correlation matrix.

Principal Components Analysis (PCA) revealed the presence of thirty components with eigenvalues exceeding 1, explaining a total of 95.2% of the variance. An inspection of the screeplot revealed a leveling after the seventeenth component. Using Catell's (1966) scree test, it was determined that 17 components would be retained for further investigation. To aid in the interpretation of the 17 components, Varimax rotation was performed. When loadings less than 0.40 were excluded, the analysis yielded a 17-factor solution with a simple structure (factor loadings $\Rightarrow .40$). The 17 components showed a number of strong loadings and all variables loading

substantially on only one component. The 17-component solution explained a total of 78.1% of the variance; the components and their contributing percentage are in Table 10.

TABLE 10. *PWS Factor Analysis, Percent of Variance Explained*

Component	% Of Variance Explained
1	15%
2	8.%
3	7.1%
4	6.3%
5	5.0%
6	4.3%
7	4.0%
8	3.7%
9	3.5%
10	3.2%
11	2.9%
12	2.8%
13	2.6%
14	2.5%
15	2.26%
16	2.22%
17	2.1%

A total of 103 items from the OLP were dropped from the factor loading. Items in the factor analysis were chosen for deletion (Costello & Osbourne, 2005) that were less than .40 or dual loadings on an item were within two tenths of a decimal point as shown in Table 11.

TABLE 11. *Factor Analysis: Deleted Items from the OLP Instrument*

Item Number	Deleted Physical Dimension Items	Factor Loadings
2	Outside my job, I am physically active for a total of at least 20 minutes each day.	.375
3	I warm up before exercising.	.315
4	I schedule 15-20 minutes two or more times a week for strength training.	.436 .298
5	I use alcohol and/or drugs as a way of handling stressful situations.	.277
6	I take action to minimize my exposure to tobacco smoke.	.432 .301
7	I am exposed to other people's tobacco smoke.	.269
8	I limit my intake of fat.	.250
11	I limit my intake of meat and animal products.	.422 .278

TABLE 11. *Continued*

12	I drink water throughout the day.	.363
13	I avoid processed meats (for example sausage, salami, hot dogs, bacon).	.360 .489
14	I use low-fat or non-fat dairy products.	.401 .336
15	I read food labels when buying food for the first time.	.538 .431
17	I eat even when I'm not hungry.	.391
18	Time/convenience is the main factor in my food choices.	.308 .411
20	I skip meals.	.400 .323
21	I wear a helmet when riding a bicycle.	.212
22	I floss my teeth daily.	.345
23	I sleep more than six hours each night.	.475 .359
24	I sleep through the night.	.449 .335
26	I wake up refreshed in the morning.	.444 .346
27	I feel drowsy during the day.	.323
28	During the past four weeks, how frequently have you experienced bodily discomfort?	.312
29	During the past four weeks, how much did discomfort interfere with your normal work?	.441 .297
30	I experience trouble with sexual functioning.	.379
31	I'm not the type of person who can change his or her diet.	.356
32	It is important for me to maintain a healthy diet.	.383
33	I don't have time to take care of myself.	.334
34	I expect to live a long and healthy life.	.141
35	I take personal responsibility for my health.	.366
37	I am self-conscious about my appearance.	.310 .500
39	I am pleased with my physical condition.	.387
40	I have all the energy I need to accomplish my goals.	.267 .426
41	My hearing limits my personal and professional life.	.443 .206
42	When I look in the mirror, I am satisfied with what I see.	.343
43	I am satisfied with my overall attractiveness.	.315
44	I use tobacco products.	.298
45	I used tobacco products in the past.	.476 .288
46	I participate in aerobic exercise during the week.	.302 .459
47	I participate in recreational activities during the week.	.377
Item Number	Deleted Emotional Dimension Items	Factor Loadings
1	I am satisfied with my personal life.	.529 .382
4	My daily life is full of things that are interesting to me.	.305
6	I generally enjoy the things I do.	.548 .435
7	I feel loved and wanted.	.540 .398
10	I feel downhearted and blue.	.448 .332
13	I feel relaxed.	.361
14	I awake feeling fresh and rested.	.457 .327
15	I feel so down in the dumps that nothing can cheer me up.	.431 .368

TABLE 11. *Continued*

16	I expect good things to happen to me.	.368
17	I feel good about things I've done in the past.	.345
18	I am a happy person.	.302
20	I enjoy making plans for the future and working to make them a reality.	.532 .325
21	I'm optimistic about the future.	.552 .370
Item Number	Deleted Spiritual Dimension Items	Factor Loadings
1	When it comes to my own spirituality, I'm not sure what I believe.	.259
4	My spiritual beliefs help me deal with death.	.352
5	My spiritual beliefs help me to accept my weaknesses and shortcomings.	.502 .412
6	My spiritual beliefs help me to cope with illness.	.442 .566
7	My professional life is more important than my spiritual life.	.284
8	My spiritual beliefs help me to feel loved.	.375 .498
9	Adversity contributes to my spiritual growth.	.436
11	I am satisfied with my spiritual life.	.442 .343
12	My spiritual growth is a lifelong process.	.398
13	I choose leisure time activities that enhance my spirituality.	.474 .301
15	I participate in discussions about spiritual values.	.384
16	I use prayer, meditation, and personal reflection in my life.	.438 .298
Item Number	Deleted Social Dimension Items	Factor Loadings
1	I have someone to turn to if I need help with daily chores.	.330
3	I am satisfied with the relationship I have with my partner.	.297
4	I am satisfied with my sex life.	.301
5	I often feel supported at work.	.378
7	I find my work fulfilling.	.311
8	I feel support networks are helpful in reducing anxiety.	.313 .499
10	I have emotional intimacy in my sexual encounters.	.302
11	I participate in community activities.	.408 .354
12	I contribute time each week to the community where I live.	.494 .418
13	I contribute to at least one organization that strives to better the community.	.515 .401
14	I compliment others.	.386
15	I am comfortable receiving a compliment.	.450 .445
16	I admit fear or concern.	.354
17	I share personal feelings with a friend.	.448 .435
18	I ask if I have offended someone.	.436 .362
19	I am comfortable expressing my own opinion.	.383

TABLE 11. *Continued*

Item Number	Deleted Intellectual Dimension Items	Factor Loadings
1	I visit a museum or art show.	.398
2	I attend lectures, workshops, and demonstrations.	.191
3	I read about local, state, national and international political/public issues.	.300
5	I seek to learn more about other countries and cultures.	.308
6	I seek opportunities to teach or mentor others.	.410 .483
7	It is easy for me to share ideas, concepts, thoughts, or procedures with others.	.372 .519
8	I seek opportunities to learn new things.	.277
9	When I listen to the radio, I prefer programs with educational/informational values.	.335
10	I am interested in understanding the views of others.	.330
11	I think about ideas different than my own.	.248
12	Intellectual challenges are vital to my overall well being.	.368
13	I keep informed about social and political issues.	.404 .247
15	I make an effort to maintain and improve my writing skills.	.387
16	I maintain a continuing education program.	.471 .391
Item Number	Deleted Environmental Dimension Items	Factor Loadings
1	I know I impact the environment on a daily basis.	.339
2	I know how the environment impacts my health.	.393
4	It is easy for me to express myself at home.	.230
5	My home environment is as comfortable as I would like it to be.	.389
6	I have role models who inspire me to enjoy life.	.401 .489
7	I have control over the temperature at my workstation.	.372 .519
9	My work environment encourages me to achieve adequate balance between work and family.	.335
10	I do everything I can to choose an environment that is free of noise pollution.	.330
11	I beautify those parts of my environment that are under my control.	.226
12	My environment allows me to walk or bicycle rather than drive.	.236
13	When I have a chance, I car pool.	.352
14	I keep my car properly tuned.	.346
15	I participate in organized clean up days when they are held in my community.	.367
16	There is not much I can do about my work environment.	.396
17	I feel safe from violence in my neighborhood.	.341 .445

The first four components loaded respectively 8, 4, 3, and three items while the last thirteen components loaded one item onto each factor shown. Eight items loaded onto factor 1. These eight items relate to three of the dimensions of wellness (emotional, social, and spiritual) of the OLP.

This factor loads onto both the positive and the negative sub-factors of knowledge, attitude, perceptions, and behavior of personal wellness such as being optimistic about the future, knowing one's purpose in life, being optimistic, and having loved ones for support. This factor was labeled, "Multidimensional Wellness."

Four items load onto a second factor. The items which loaded onto the factor were all from the spiritual dimensions (e.g., basic purpose in life, ability to give/receive love/joy/peace, ability to pursue a fulfilling life, and ability to help others) of the OLP. There were high intercorrelations among these items that measured the knowledge, perception, and skill of pursuing a fulfilling life and finding a purpose in life through spirituality. This factor was labeled the "Spiritual Dimension."

The three items that loaded onto Factor 3 all related to emotional wellness (e.g., anxiety, depression, well-being, self-control, and optimism) regarding the attitude, perceptions, and behavior of being in control of oneself, being calm and relaxed. This factor was labeled, "Emotional Wellness."

The three items that load onto Factor 4 are from the physical dimensions (e.g., fitness, nutrition, avoidance of harmful behavior, prevention, and early recognition) of the PWS. The physical items represent the behavior, attitude, and skills needed for healthy habits of fitness. This factor was labeled, "Physical Wellness."

The remaining thirteen factors had loadings of one item each from the sub-factor and sub-domains of the Intellectual, Environmental, Physical, Social, and Spiritual dimensions. Within each dimension of the OLP are sub-factors that are different for each dimension. A second sub-level of measurement assesses knowledge, attitude, perception, behavior, and skill for each sub-factor of each dimension. These components will be referred to as the "Sub-Domain Wellness."

TABLE 12. *Factor Loadings of the OLP***Component 1: Multidimensional Wellness**

Survey Item	Statement	Factor Loading
Em12	I feel that my love relationships are full and complete.	.919
Sp14	I'm not sure who I am.	.580
So2	I have someone to turn to if I need love or affection.	.573
Em19	I feel good when I think about what I hope to do in the future.	.570
Em21	I'm optimistic about my future.	.552
Em3	I feel that the future looks hopeful and promising.	.538
Em8	I feel that I have nothing to look forward to.	.525
Em2	I feel lonely.	.505

Note. Em=Emotional Dimension; P=Physical Dimension So=Social Dimension; Sp=Spiritual Dimension

Component 2: Spiritual Wellness

Survey Item	Statement	Factor Loading
2	My spiritual beliefs help me to deal with adversity in life.	.954
10	My spiritual beliefs have a positive influence on my relationship with others.	.910
3	My spiritual beliefs give meaning to my life.	.894
8	My spiritual beliefs help me feel loved.	.884

Note: All items are from the Spiritual Dimension

Component 3: Emotional Wellness

Survey Item	Statement	Factor Loading
9	I feel calm and peaceful.	.789
11	I am able to relax without difficulty.	.763
5	I feel tense.	.614

Note. All items are from the Emotional Dimension

Component 4: Physical Wellness

Survey Item	Statement	Factor Loading
38	I keep myself in good physical shape.	.784
1	I experience physical discomfort that limits my daily tasks.	.617
25	I fall asleep quickly when I go to bed at night.	.500

Note. All items are from the Physical dimension

TABLE 12. *Continued***Sub-Domain Wellness Components**

Survey Item	Statement	Factor Loading
<i>Component 5</i>		
I4	I learn the meaning of new words.	.787
<i>Component 6</i>		
En8	I have role models who inspire me to enjoy life.	.702
<i>Component 7</i>		
P16	I have breakfast every morning.	.619
<i>Component 8</i>		
I8	I seek opportunities to learn new things.	.587
<i>Component 9</i>		
P3	I warm up before exercising.	.513
<i>Component 10</i>		
P19	The foods I eat are the ones I know are best for my body/health.	.510
<i>Component 11</i>		
En3	It is easy for me to find healthy foods to eat at work.	.507
<i>Component 12</i>		
P10	I avoid sweets and sugars.	.504
<i>Component 13</i>		
P36	I find it difficult to make the time for daily physical activity.	.501
<i>Component 14</i>		
I14	I am interested in learning about scientific discoveries.	.485
<i>Component 15</i>		
P9	I eat grains, cereals, pasta, whole wheat bread, and brown rice.	.472
<i>Component 16: Social</i>		
So9	I cannot improve my interpersonal skills.	.409
<i>Component 17: Social</i>		
So20	I feel emotionally withdrawn from others.	.403

Note. En=Environmental Dimension, I=Intellectual dimension, P=Physical Dimension, So=Social Dimension

Construct Validity

Convergent validity. A total score was derived from the OLP instrumentation by summing all response items (45 items) retained from the factor analysis. Higher scores on the OLP indicate greater optimal living. A total of 296 respondents who took the OLP survey at T1 were sent the WEL survey for completion three days later (T2). Higher scores on the WEL instrument indicate greater “wellness.” A total of 254 respondents completed the WEL survey at T2. Table 13 presents

the measures of central tendency for the OLP data collected at T1 and the WEL instrumentation data collected at T2. The minimum scores for each instrument are 30 (OLP) and 131 (WEL) while the maximum scores for each instrument are 225 (OLP) and 655 (WEL).

TABLE 13. *Measures of Central Tendency for the OLP*

Variable	<i>M</i>	<i>mdn</i>	<i>SD</i>	Range
OLP summed score	128.03	128.0	16.44	79 – 166
WEL summed score	406.15	405.0	37.01	235 – 508

Note. *M* = Mean; *mdn* = Median; *SD* = Standard Deviation.

Convergent validity was not done because scores from the OLP survey at T1 and the WEL survey at T2 could not be paired across individuals. Therefore, Pearson's correlation coefficients could not be obtained on the bi-variate comparisons of the instrumentation scores. Pearson's correlation requires the multiplication of paired variables on each record of study.

The WEL was used for convergent construct validation of the PWS and OLP by comparing subscales from the data collected in the study. The 103-item WEL is composed of sixteen factors aggregated into five subscales (dimensions) based on a model of behavioral counseling. The five subscales are Spirituality, Self-Regulation, Work and Leisure, Friendship, and Love. The three WEL subscales Self-Regulation, Work, and Leisure have sub-factors embedded in them.

The WEL's five subscales, factors, and item numbers include: 1) Spirituality (10 items); 2) Self-regulation (12 factors [sense of worth, sense of control, realistic beliefs, emotional responsiveness, intellectual stimulation, sense of humor, nutrition, exercise, self-care, stress management, gender identity, and cultural identity] measured by 64 items); 3) Work and Leisure (2 factors [work and leisure] measured by 14 items); 4) Friendship (7 items); and 5) Love (8 items).

The 36-item PWS is composed of six subscales based on a perceptual model of holistic wellness labeled as the dimensions of emotional, intellectual, physical, psychological, social, and

spiritual. The 135-item OLP is composed of six subscales also based on a perceptual model of holistic wellness with emotional, environmental, intellectual, physical, social, and spiritual dimensions.

The WEL, PWS, and OLP subscales are displayed in Table 14. Subscales and items were aggregated based on common definitions found in the literature to facilitate instrument comparison (Katz et al., 1992). The PWS definition and items were similar to the emotional dimension of other models (WEL, OLP) and were included with this dimension for comparison. The WEL's Self-Regulation dimension had some of the sub-factors of the emotional, psychological, physical, and intellectual dimensions. Therefore, the sub-factors and their items were pulled from the broader category of the Self-Regulation dimension for analysis. The environmental dimension was not included because it was only measured in the OLP.

TABLE 14. *Sources of Items for Subscale Comparison of the WEL, PWS, and OLP*

Dimension	WEL Dimension: Definition and Number of Items	PWS Dimension: Definition and Number of Items	OLP Dimension: Definition and Number of Items
Emotional	Included four factors of the dimension Self-Regulation: sense of worth, sense of control, realistic beliefs, and emotional response 49 items	1) Emotional: possession of a secure self-identity and self-esteem—six items. 2) Psychological: perception that outcomes will be positive—six items 12 items	Emotional: awareness and acceptance of a wide range of feelings in oneself and others, as well as one's ability to constructively express, manage, and integrate feelings 21 items
Intellectual	One factor of the dimension Self-Regulation: Person seeks Intellectual Stimulation. Five items	Internally energized to learn Six items	Choosing activities to stimulate different centers of the brain 16 items
Physical	Two Factors of the dimension Self-Regulation: Engaged in healthy exercise and nutrition. 10 items	A positive perception and expectation of physical health Six items	Achieve wellness through regular physical activity and balanced nutrition 43 items

TABLE 14. *Continued*

Social	Included three dimensions—Work and Leisure, Friendship and Love. Relationships that involve a meaningful connection with others at home and work.	Perception and awareness of available support from family and friends in time of need Six items	Personal contribution to the community and interdependence and harmony with others 20 items
	29 items		
Spirituality	Spirituality with no sub-factors. Personal beliefs and behaviors practiced as part of the recognition that we are more than the material aspects of mind and body.	A unifying force and integrator between mind and body Six items	Seeking meaning and purpose in human existence 16 items
	10 items		

Theory-specific subscales of instruments may indicate that holistic wellness instruments have a focused population base such as holistic wellness based on behavioral counseling theory which uses objective measures (WEL), versus the PWS and OLP based on subjective perceptions and expectations of personal wellness which is subjective. The subscales (dimensions) of the PWS and OLP are very similar in design, as compared to the complex grouping of the WEL which has subscales such as Self-Regulation with embedded factors such as emotional, psychological, intellectual. These same factors are measured as separate subscales in the majority of other wellness instruments (Adams et al., 2000; Depken, 1994; Hettler, 1980; Renger et al., 2000).

Table 15 shows the purpose of the data collection, its theoretical base, subscale reliability (internal consistency) and validity data (content, criterion).

TABLE 15: *Instrument Comparison of WEL, PWS and OLP*

	WEL	PWS	OLP
Purpose of Data	Designed to assess the factors of holistic wellness.	Designed to measure the perceptions and expectations of holistic wellness.	Designed to measure knowledge, attitude, perception, behavior, and skill in each of the wellness areas.
Emotional Reliability	<i>Internal Consistency:</i> $\alpha=.93$	<i>Internal Consistency:</i> $\alpha=.78$	<i>Internal Consistency:</i> $\alpha=.81$
Emotional Validity	<p><i>Strong Face Validity:</i> A complex model of wellness; the emotional domain measures are present but it is not consistent with other models of wellness in regards to separating it out as its own subscale (Adams, Bezner & Steinhardt, 1998; Depken, 1994; Durlak, 2000; Hettler, 1980; Lafferty, 1979; Renger et al., 2000)</p> <p><i>Content Validity</i> Four of the factors (sense of worth, sense of control, realistic beliefs, and emotional response) have items in the dimension of Self Regulation. Items represent the literature definition of awareness and management of emotions (Hettler, 1980).</p>	<p><i>Strong Face Validity:</i> Emotional subscale is present and consistent with other models of wellness.</p> <p>Psychological subscale is not usually included in other models of wellness and appears to measure the emotional domain (Adams, Bezner & Steinhardt, 1998; Depken, 1994; Durlak, 2000; Hettler, 1980; Lafferty, 1979; Renger et al., 2000; Roscoe, 2009)</p> <p><i>Content Validity</i> Emotional items represent the literature's definition of a secure self-identity and self-image (Adams, Bezner & Steinhardt, 1998; Crose et al., 1992; Hettler, 1980).</p> <p>Psychological items measure an individual's sense of optimism and seeking positive outcomes in the experiences of life (Hettler, 1980).</p>	<p><i>Strong Face Validity:</i> Emotional subscale is present and consistent with other models of wellness.</p> <p>(Adams, Bezner & Steinhardt, 1998; Depken, 1994; Durlak, 2000; Hettler, 1980; Lafferty, 1979; Renger et al., 2000)</p> <p><i>Content Validity</i> Emotional items represent the literature's definition of self-image as important with a self-understanding of well-being, self-control, anxiety, and depression (Hettler, 1980; Leafgren, 1990; Renger et al., 2000).</p>
Intellectual Reliability	<i>Internal Consistency:</i> $\alpha=.84$	<i>Internal Consistency:</i> $\alpha=.66$	<i>Internal Consistency:</i> $\alpha=.72$
Intellectual Validity	<p><i>Strong Face Validity</i> Self Regulation subscale has a factor named "Intellectual Stimulation." The Intellectual domain measures are not consistent with other models in which it is a subscale (Adams, Bezner & Steinhardt, 1998; Depken, 1994; Durlak, 2000; Hettler, 1980; Lafferty, 1979; Myers, 2004; Renger et al., 2000).</p>	<p><i>Strong Face Validity</i> Intellectual subscale is consistent with other models of wellness (Adams, Bezner, & Steinhardt, 1998; Depken, 1994; Durlak, 2000; Hettler, 1980; Lafferty, 1979; Renger et al., 2000).</p>	<p><i>Strong Face Validity</i> Intellectual subscale is consistent with other models of wellness (Adams, Bezner, & Steinhardt, 1998; Depken, 1994; Durlak, 2000; Hettler, 1980; Lafferty, 1979; Renger et al., 2000).</p>

	<p><i>Content Validity</i> Items represent engaging one's mind in creative and stimulating activities (Hettler, 1980; Leafgren, 1990; Myers, 2004).</p>	<p><i>Content Validity</i> Items represent the perception of being intellectually stimulated towards mental challenges and critical reasoning (Adams, Bezner, & Steinhardt, 1998; Hettler, 1980; Leafgren, 1990).</p>	<p><i>Content Validity</i> Items represent a measure of the intellectual subscale specifically focused on the individual's attitude and growth in seeking and sharing knowledge (Durlak, 2000; Renger et al., 2000).</p>
Physical Reliability	<p><i>Internal Consistency:</i> $\alpha=.93$</p>	<p><i>Internal Consistency:</i> $\alpha=.69$</p>	<p><i>Internal Consistency:</i> $\alpha=.70$</p>
Physical Validity	<p><i>Weak Face Validity</i> Self-Regulation subscale has "Nutrition and Exercise" factors. The Physical domain measures are not consistent with other models of wellness in which it is a subscale lacks clarity as to what the Self-Regulation subscale is measuring (Adams, Bezner, & Steinhardt, 1998; Depken, 1994; Durlak, 2000; Hettler, 1980; Lafferty, 1979; Myers, 2004; Renger et al., 2000)</p> <p><i>Content Validity</i> Items measure fitness, flexibility, and strength of the body while maintaining a healthy diet through balance and harmony (Hettler, 1980; Myers, 2004).</p>	<p><i>Strong Face Validity</i> Physical subscale is consistent with other models of wellness (Adams, Bezner, & Steinhardt, 1998; Depken, 1994; Durlak, 2000; Hettler, 1980; Lafferty, 1979; Renger et al., 2000)</p> <p><i>Content Validity</i> Items measure person's positive perception and expectation of physical wellness. (Adams, Bezner, & Steinhardt, 1998; Depken, 1994; Hettler, 1980).</p>	<p><i>Strong Face Validity</i> Physical subscale is consistent with other models of wellness (Adams, Bezner, & Steinhardt, 1998; Depken, 1994; Durlak, 2000; Hettler, 1980; Lafferty, 1979; Renger et al., 2000)</p> <p><i>Content Validity</i> Items measure person's level of fitness and nutrition (Durlak, 2000; Hettler, 1980; Lafferty, 1979; Renger et al., 2000)</p>

TABLE 15. *Continued*

Social Reliability	<i>Internal Consistency:</i> $\alpha=.88$	<i>Internal Consistency:</i> $\alpha=.87$	<i>Internal Consistency:</i> $\alpha=.92$
Social Validity	<p><i>Strong Face Validity</i> Three subscales measure the Social domain: 1) Work & Leisure; 2) Friendship; and 3) Love. Although not consistent with other models of wellness in regards to separating it out as its own subscale, the social domain is easily identified in the instrument (Adams, Bezner, & Steinhardt, 1998; Depken, 1994; Durlak, 2000; Hettler, 1980; Lafferty, 1979; Myers, 2004; Renger et al., 2000)</p> <p><i>Content Validity</i> Items measure the individual's meaningful relationship to others and to the environment (Durlak, 2000; Hettler, 1980; Lafferty, 1979; Myers, 2004; Renger et al., 2000).</p>	<p><i>Strong Face Validity</i> Social subscale is consistent with other models of wellness (Adams, Bezner, & Steinhardt, 1998; Depken, 1994; Durlak, 2000; Hettler, 1980; Lafferty, 1979; Renger et al., 2000)</p> <p><i>Content Validity</i> Items measure interaction of and value attached to these relationships (Adams, Bezner, & Steinhardt, 1998; Depken, 1994; Hettler, 1980).</p>	<p><i>Strong Face Validity</i> Social subscale is consistent with other models of wellness (Adams, Bezner, & Steinhardt, 1998; Depken, 1994; Durlak, 2000; Hettler, 1980; Lafferty, 1979; Renger et al., 2000)</p> <p><i>Content Validity</i> Social items measure individuals' interaction with the social environment and community (Durlak, 2000; Hettler, 1980; Lafferty, 1979; Myers, 2004; Renger et al., 2000)</p>
Spiritual Reliability	<i>Internal Consistency:</i> $\alpha=.79$	<i>Internal Consistency:</i> $\alpha=.73$	<i>Internal Consistency:</i> $\alpha=.75$
Spiritual Validity	<p><i>Strong Face Validity</i> Spiritual dimension subscale is consistent with other models of wellness (Adams, Bezner, & Steinhardt, 1998; Depken, 1994; Durlak, 2000; Hettler, 1980; Lafferty, 1979; Myers, 2004; Renger et al., 2000)</p> <p><i>Content Validity</i> Spiritual items measure individual's world view (Adams, Bezner, & Steinhardt, 1998; Durlak, 2000; Hettler, 1980; Lafferty, 1979; Myers, 2004; Renger et al., 2000).</p>	<p><i>Strong Face Validity</i> Spiritual subscale is consistent with other models of wellness (Adams, Bezner, & Steinhardt, 1998; Depken, 1994; Durlak, 2000; Hettler, 1980; Lafferty, 1979; Myers, 2004; Renger et al., 2000)</p> <p><i>Content Validity</i> Spiritual items measure an individual's finding purpose in life. (Adams, Bezner, & Steinhardt, 1998; Durlak, 2000; Hettler, 1980; Lafferty, 1979; Myers, 2004; Renger et al., 2000).</p>	

Correlations for test/retest data. Test/Retest scores of the OLP instrument scores could not be assigned to specific individuals from T1 to T2. As a result, test/retest scores of the OLP instrument could not be done.

Only those scales were analyzed that allowed comparisons between the OLP and PWS questionnaires (i.e., scales measuring the emotional, intellectual, physical, social, and spiritual dimensions). The environmental dimension of the OLP was not considered in this testing because there was no matching dimension in the PWS scale; likewise the psychological dimension of the PWS was not considered because there was no matching dimension on the OLP scale.

To determine whether or not the OLP and PWS yield similar results, the responses were aggregated by dimension, and a t-test was conducted to check for a difference in mean response for each dimension. However, because the OLP was scored on a 1-5 scale and the PWS was scored on a 1-6 scale, it was necessary to first standardize the values. This was accomplished by dividing each response by 5 and 6 in the OLP and PWS, respectively. The result was that each question was scaled on a 0-1 interval. Next, the mean responses for each dimension of the OLP and PWS were calculated. The table and histogram below show the mean response of all questions per dimension for the OLP and PWS. The difference ranged from .012 to .073.

TABLE 16. *Mean Response of Questions per Dimension of the OLP and PWS*

	OLP	PWS	Difference
Emotional	0.705	0.686	0.018
Intellectual	0.661	0.590	0.071
Physical	0.636	0.624	0.011
Social	0.684	0.730	0.046
Spiritual	0.658	0.645	0.012

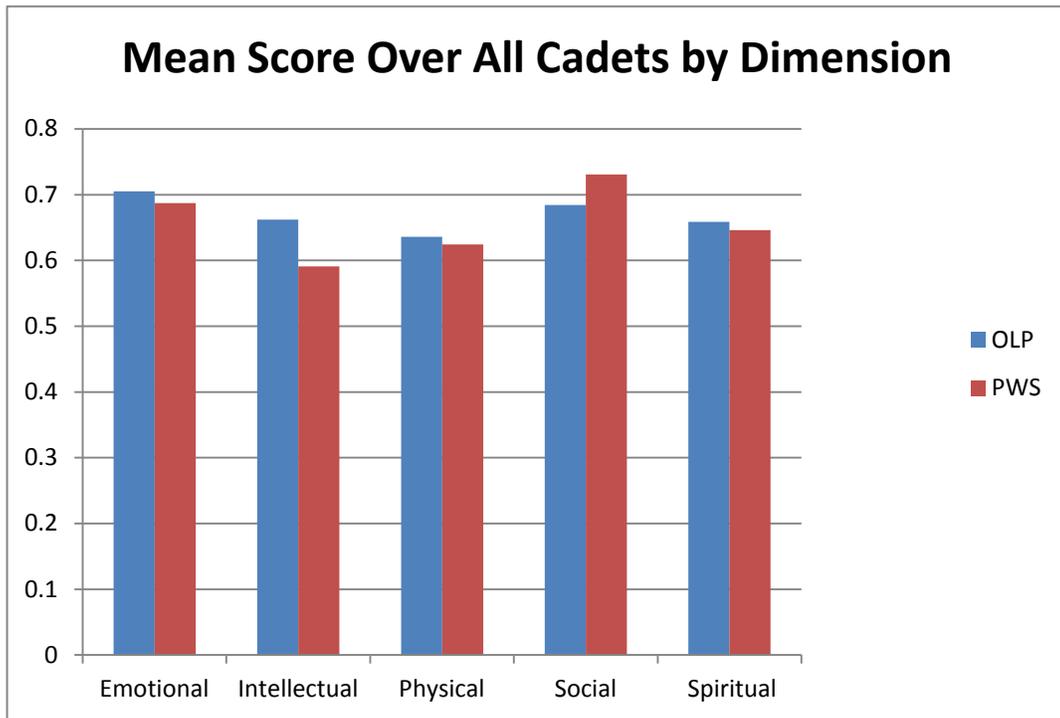


FIGURE 2. Mean score response per dimension for the OLP and PWS

More specifically, each mean difference by dimension was calculated using m responses from n soldiers, resulting in an $m \times n$ sample size. For the PWS $m=6$, $n=698$ resulting in a sample size of 4188. Despite very small mean differences, t-tests checking for differences in means were significant at the .05 level for all dimensions. However, it should be noted that these tests used very large sample sizes.

Findings

When the mean for all Cadets was compared from OLP to PWS by dimension at T1, the results showed that the means were significantly different. However, as stated above, this is likely to be the result of a small standard error of the mean due to a large sample size. More intuitively, the mean response differences for all dimensions varied by less than, .07. These differences are trivial and are not large enough to conclude that the OLP and PWS yield different standardized

results. For example, a difference of .07 in standardized OLP scores would be equivalent to a difference in .35 in raw means, which in this case is a negligible difference.

CHAPTER 5: DISCUSSION

In Chapter 4 the results from this study comparing the psychometrics of two Wellness Instruments were presented. The final chapter of this dissertation provides an overview of the study including a discussion of the participants and instruments. The findings of the exploratory and quantitative data analyses are interpreted. Conclusions are presented within the perspective of previous research literature. The study's limitations, future research recommendations, and implications for nursing practice are also presented.

Overview of the Study

The purpose of this research study was to identify a valid, reliable, easy-to-use instrument for measuring wellness holistically in a military population. The long-term goal of the research program is to determine an effective way to present data collected by the instrument shown to be the most useful in military primary care clinics. The study had two objectives:

- 1) Evaluate, in a military population, the psychometrics of two existing instruments that collect data to measure wellness holistically.
- 2) Determine the wellness instrument that demonstrates adequate reliability and validity.

In this research, the psychometrics of two existing wellness instruments in a military population were compared to establish the usefulness of these instruments for establishing baseline measures of soldiers' wellness in primary care clinics. Two wellness instruments, the *Optimal Living Profile* (OLP) and the *Perceived Wellness Survey* (PWS), were investigated. In addition, the *Wellness Evaluation of Lifestyle* (WEL) was used to evaluate whether the *OLP* and the *PWS* measure the constructs of wellness appropriately. Face validity was assessed by comparing the items of the *OLP* and the *PWS* with the Army Holistic Wellness Model. Voluntary participants for

the study were recruited from first-year Cadets at the United States Military Academy, West Point, New York.

Major Findings

Similarities and differences between the results of this study and previous research are discussed below. The current literature in regards to holistic wellness is reviewed and its application to the needs of the Soldier is discussed.

Response Rates

Due to the ease of electronic survey delivery, there has been an increased use of this format for collecting survey data (Manfreda, 2002). Vehova and Manfreda (2001) define *response rate* as the percentage of electronic survey invitations that result in a response. To analyze the benefit of the electronic format, Hamilton (2009) completed a meta-data analysis of online survey response rates and time in which he calculated the average response rates to 199 separate surveys. In all, the 199 surveys involved sending 723,790 electronic invitations to potential respondents within the United States. Table 17 compares Hamilton's average response rate with the response rates to the surveys in the present study (including both T1 and 2).

TABLE 17. *Meta-Analysis/OLP/ PWS Survey Response Rates*

Survey Response Rates	Hamilton's Meta- Analysis	T1 OLP/PWS	T2 OLP/PWS	T2 WEL
Survey response rate	36.45%	100%	100% (64% of T2)	100% (33% of T2)

Response rates vary greatly from survey to survey and can be influenced by almost all aspects of the survey process (de Leeuw & de Heer, 2002) including participants' demographic characteristics or population culture, survey length and design, ease and intuitiveness of survey questions, perceived importance of the survey topic to respondents, the number of times

participants are contacted, and whether personalized or impersonalized, mail-based or e-mail-based follow-up contacts are implemented (Porter & Umbach, 2006). There is great disparity between Hamilton's (2009) average response rate (26.45%) and the response rate for this research (100%). In addition, of the 768 Cadets who started the survey at T1 and T2, only 7% did not complete all items. In fact, only 59 surveys were not completed by this group of cadets. It is unclear why these 57 surveys were not completed.

Two important factors contributed to the outstanding response rate for this research: the culture and academic requirements at USMA, West Point. The mission of West Point is to develop outstanding leaders. The USMA motto, which can be found across the campus and on graduating seniors' rings, is "Duty, Honor, Country." The academy conveys to all Cadets and Soldiers that discipline is key to the success of any military organization and the missions it endeavors to complete. Officers are taught to lead and serve as examples to inspire others.

The Cadets who participated in this survey had been part of the military academy culture for five months. As part of their transition into the military they completed Cadet Basic Training (CBT). CBT is an initial cadet experience designed to transition freshmen (new cadets) into the military. Miller (2005) addressed the challenge and lack of sleep as an inherent component of CBT along with some challenging activities that are stressful. Cadets experience anticipatory stress, time management pressures, sleep deprivation, performance evaluations, conflicts between teamwork and competitive grading, and inexperience in the leadership role (Myers & Sweeney, 2004).

The second factor contributing to this high response rate is that the Department of Psychology requires a mandatory course for all first-year Cadets. In order to pass Psychology 101, all Cadets are required to complete either a report on an experiment or they must participate in an

experiment. Cadets were able to show completion of the study by printing out a certificate at the end of each survey. Most Cadets, conscious of their time management, will participate in an experiment such as completing an online survey.

Reliability and Validity of the PWS/OLP

To examine the factor structure of the OLP and the PWS and assess their validity and reliability, an exploratory factor analysis was employed. Construct validity was explored by conducting a principal component factor analysis using a varimax rotation. Results of exploratory factor analysis did not confirm the six dimensions of the OLP (emotional, environmental, intellectual, physical, social, and spiritual) nor of the PWS (emotional, intellectual, physical, psychological, social, and spiritual), as their authors proposed. Instead, the results yielded a new factor structure composed of 30 items (out of the original 133 items) measuring multiple components within the dimensions (Multidimensional, Spiritual, Emotional, Physical, and single item components measuring the sub-domains of these dimensions) for the OLP and 27 items (originally 36 items) measuring four dimensions (Multi-dimensional, emotional, psychological, and physical) for the PWS. Factor analysis supported these new dimensions of the OLP and PWS. The new dimensions of the PWS (multidimensional, emotional, psychological, and physical) and of the OLP (Multidimensional, Spiritual, Emotional, Physical, and the Sub-Domain Wellness) were strongly supported. In particular, the high loadings of the physical and emotional and intellectual functioning scales (>0.80) confirmed clearly distinguishable dimensions. One of the reasons for the different dimensions in the factor analysis for this military academy sample is that these dimensions correlate with the military's emphasis on academic success, physical fitness, and leadership. Leadership directly relates to relationships, communication skills, and the ability to

resolve conflicts (Roscoe, 2009; Myers, 2004; Harari, Waehler & Rogers, 2005), all measurements of emotional and psychological wellness.

In addition, although both the OLP and PWS model incorporate six dimensions of wellness, the results of the factor analysis were not expected to yield six separate factors because the inter-correlations among the dimensions also indicated that the underlying content was more alike than different (Costellow & Osborne, 2005; Roscoe, 2009). Authors of the OLP and PWS describe the models on which each instrument is based as interrelated, interactive, and integrated within the entire system of functioning (Adams, Bezner, & Steinhardt, 1998; Renger et al., 2000; Harari, Waehler & Rogers, 2005). Adams, Bezner, Drabbs, Steinhardt, & Zambarano (1998) also described the PWS model as a broad and unifactorial construct. The OLP and PWS are not unidimensional scales, but the item content of each survey is tightly interrelated and focused on measuring holistic wellness.

The lack of support for a 6-dimensional factor structure for the PWS could be due to the significant positive correlations among the six initial subscales ($r = .77$). The strongest loading items ($\geq .50$) in the PWS share three common themes: 1) multidimensional; 2) emotional; 3) psychological; and 4) physical. Except for the physical dimension (for which all six items were retained), for all other dimensions one item in each did not load and was not retained in the final structure. The items describing a “social” dimension did not load as an independent factor and had lower correlations ($r = .31-.44$). There were especially high inter-correlations among the spiritual, psychological and social dimensions ($r = .44-.98$). The likely reason for this is that the spiritual, psychological, and social dimensions were each based on scales measuring optimism, wellbeing, and self-esteem (Harari, Waehler & Rogers, 2005). For example, some of the item statements

were, “I have felt in the past that my life was meaningless,” “I sometimes think I am a worthless individual,” and “In the past, I hardly ever expected things to go my way.”

The new 17-dimensional factor structure for the OLP in this analysis could be due to the significant positive correlations among the six proposed subscales. The strongest loading items for the OLP ($\geq .50$) share only four common themes: 1) spiritual; 2) emotional; 3) intellectual; and 4) physical. Within each dimension of the OLP are sub-factors (e.g., Physical has fitness, nutrition, avoidance of harmful behavior, prevention and early recognition) that are different for each dimension. A third sub-level of measurement assesses knowledge, attitude, perception, behavior, and skill for each sub-factor. Unlike the PWS, where all physical items loaded on one factor, factor loadings for the final physical dimension of the OLP included only nine of the 43 original items. Examples include: “I limit my intake of fat,” “I avoid sweets and sugars,” and “The foods I eat are the ones I know are best for my body/health.”

The items comprising environmental and social dimensions had lower correlations ($r=.34$ and $.41$) and thus did not represent independent factors. For example, items in the environmental dimension included: “When I have a chance I car pool,” and “I keep my car properly tuned.” These activities and the following items in the original social dimension are unlikely to be realized in the cadet’s current social environment: “I have a sense of control in my work”; “I have someone to turn to if I need help with daily chores.” In retrospect, the environmental dimension items could have been removed from the survey as it related to occupational issues which would not be related to the model of wellness for USMA Cadets. According to Renger et al. (2000), such sections are considered free-standing and may be excluded when testing in a non-clinical setting.

The results suggest that both the OLP and PWS are affective constructs capturing the composite wellness of an individual (Ozer, Best, Lipsey & Weiss, 2003; Zhang, 2005). Renger et

al. (2000) and Adams, Bezner, and Steinhardt (1998), in the development of the OLP and PWS, respectively, stressed the importance of attitude and perception in each of the several wellness areas and its impact in survey response. These scales were administered to the Cadets within their first academic month at West Point after completion of strenuous training for three months. This may also explain why the social and environmental dimension of the OLP and the social and spiritual dimensions of the PWS did not have higher factor loadings.

Since Dunn (1977) introduced the first wellness model, the number of multidimensional models has grown. Roscoe (2009) reviewed ten different holistic models of wellness, including Renger et al. (OLP, 2000) and Adams, Bezner, and Steinhardt (PWS, 1998), and reported that the construct of wellness is most consistently measured by the emotional, intellectual, social, spiritual, and physical dimensions. The psychological and environmental dimensions were included only in the PWS and OLP models. Further, reviews (Duran, 2006; Roscoe, 2009) showed a tendency for the number of dimensions to decrease as more wellness research is completed. For example, Ardell moved from a five-dimension model (1982) to a three-dimension model (2001), and Myers's original five-dimension WEL (2000) now has only four dimensions (2005).

Definitions of environmental, social, and spiritual dimensions found in current literature also can be used to clarify our understanding of the OLP/PWS factor loading. Renger et al. (2000) and May (2007) argued that environmental wellness includes the balance between home and work life. By contrast, social wellness encompasses the degree and quality of interactions with others, the community, and nature (Miller & Foster, 2010). Spiritual wellness is found within shared community and can be described as a continual process of finding meaning and purpose in life, while coming to terms with one's place in the world (Roscoe, 2009). The social, spiritual, and environmental dimensions differ from the other dimensions because each of these assesses

perception of available external resources; whereas the other dimensions assess perceptions of available internal resources (Adams, Bezner, Drabbs, Steinhardt, & Zambarano, 2006). Moreover, social wellness relates strongly to the level of communication skills and how comfortable one feels in interacting with others within a situation.

In the literature, emotional and psychological dimensions are closely correlated and are often addressed as one dimension. Helliwell (2005) considered emotional wellness to be a continual process that includes awareness and management of feelings and a positive view of self, the world, and relationships. Renger et al. (2000) argued that emotional wellness is related to one's level of depression, anxiety, well-being, self-control, and optimism. Finally, Myers et al. (2005) and Ryff & Singer (2006) highlighted the important factors of emotional and psychological wellness as coping with stress and maintaining a positive attitude toward life and being optimistic about the future. The interconnectedness of these definitions suggests how each item could contain measures of other dimensions of wellness.

In this study, reliability was assessed by determining the internal consistency (Cronbach's α) of the different dimensions of the PWS and OLP and the stability of those dimensions (test-retest reliability). Internal consistency refers to the extent to which items on the test or instrument are measuring the same thing (Everitt & Pickles, 2007). Internal consistency was not measured at two points in time (T1 and T2) but by instrument psychometric comparisons.

The OLP and PWS showed comparable internal consistency and reliability to the WEL. The WEL (Myers & Bechtel, 2004) had similar internal consistency ($\alpha = .60-.94$) for scaled responses with college students. The physical-related dimensions of the WEL questionnaire showed similar Cronbach's Alpha scores for scales and also showed slightly lower correlations between the intellectual dimensions and reported emotional dimensions.

Based on a pilot study that applied the OLP to a population of college students ($n=19$), Renger et al. (2000) reported Cronbach's alpha estimates ranging from .78 (Environmental Wellness) to .95 (Emotional). In a second study, von Guenther (2007) used the OLP to assess the wellness of 142 student athletes at a large university. Internal consistency for each dimension was adequate to high (Cronbach's alpha scores from .78 to .95). Reliability scores in each of these studies are similar to those found in the current study measuring wellness in the same age group with some similar demographics (undergraduate).

Adams, Bezner, and Steinhardt (1998) tested the PWS in a single study using both a sample population of two companies' adult employees and undergraduate students ($n=558$). Adams reported Cronbach's alpha estimates ranging from .37 to .56. The total scale internal consistency was .91, and a factor analysis of the data from the original adult sample supported treating perceived wellness as a unidimensional concept. Similar total scale internal consistency results were seen in subsequent administrations of the instrument (Adams, Bezner, Drabbs, Steinhardt, & Zambarano, 2000). Harari, Waehler and Rogers (2005) explored the psychometric properties of the PWS. As in previous studies and the current study, the internal consistency for the PWS was .91. Only four of the six subscales demonstrated adequate internal consistency ($\alpha > .70$).

The internal consistency estimate for the PWS was .92 and .90 in a test-retest by Kinney, Rodger, Nash, and O'Bray (2003). Sidman, D'Abundo, and Hritz (2009) studied the relationship between self-efficacy and wellness (PWS) in undergraduate students ($n=611$). The only dimension of the PWS shown to have no significant relationships with self-efficacy was social wellness, which did not load strongly in this study. Byron & Miller-Perrin (2006), in their study of faith and well-being, eliminated the spiritual items of the PWS and used the Santa Clara Strength of Religious Faith Questionnaire instead. Internal consistency was excellent, with Cronbach's alpha

estimates all $> .88$. Overall, reliability was high for both the PWS and OLP when measured with Cronbach's coefficient alpha.

The subscales that are predominantly present in holistic wellness models are Social, Emotional, Physical, Intellectual, and Spiritual (Adams, Bezner, & Steinhardt, 1998; Greenberg, 1985; Hettler, 1980; Lafferty, 1979; Renger et al., 2000). In a review of the literature, only the OLP included the environmental subscale (Renger et al., 2000) and only the PWS included the psychological subscale (Adams, Bezner, & Steinhardt, 1998). Subscale consistency ranged from .66 to .93 (lowest were physical and intellectual).

Content validity was demonstrated in the selection procedure as each dimension was a representative sample of the measured constructs, wellness. In the Cadet population, the five subscales of the WEL showed good internal consistency with Cronbach's alphas ranging from .84 to .93. The PWS internal consistency showed alphas ranging from .66 to .87 and the OLP had alphas ranging from .70 to .92. Different construct definitions will lead to different sets of items. According to DeVellis (1991), "The boundaries of the phenomenon must be recognized so that the content of the scale does not inadvertently drift into unintended domains" (p. 51). The item definitions of each of the dimensions of wellness for the OLP and PWS were more similar to each other than they were to the WEL items.

The first step when developing a new scale is to define the construct of interest (Sweeney & Witmer, 1992). There are some differences in the construct definitions of the WEL, OLP, and PWS that influenced item construction in each instrument. Just as the constructs of the WEL are reexamined with each study, the application of the OLP and PWS instruments in some studies has been manipulated by different researchers to better fit the research question or the measured

sample group. For example, Von Guenther (2007) did not include the environmental dimension of the OLP when measuring wellness in athletes. Similarly, Byron and Miller-Perrin (2006) did not use the spiritual items of the PWS, but substituted a faith-based instrument to fit the goals of their study. Construct definition and sample population continue to be important factors in the measure of wellness and the instrument of choice.

In this study, the appropriateness of the PWS and OLP were assessed by comparing score ranges, means, and standard deviations with the WEL. Mean scores indicate the central tendency of the group and ideally these should lie near the midpoint of the scale range (Bland & Altman, 2003). For a normal distribution then, the mean and median are the same value for each instrument. As the symmetry of a distribution increases, the measures of central tendency will converge on the same value, controlled by the standard deviation.

The group of scores in Table 18 was summarized by a measure of central tendency for the PWS data collected at T1, and the WEL instrumentation data collected at T2.

TABLE 18. *Measures of Central Tendency for the PWS*

Variable	<i>M</i>	<i>mdn</i>	<i>SD</i>	Range
PWS summed score	141.11	143.0	20.43	48 – 182
WEL summed score	406.15	405.0	37.01	235 – 508

Note. *M* = Mean; *mdn* = Median; *SD* = Standard Deviation.

Table 19 presents the measures of central tendency for the OLP data collected at T1, and the WEL instrumentation data collected at T2.

TABLE 19. *Measures of Central Tendency for the OLP*

Variable	<i>M</i>	<i>mdn</i>	<i>SD</i>	Range
OLP summed score	128.03	128.0	16.44	79 – 166
WEL summed score	406.15	405.0	37.01	235 – 508

Note. *M* = Mean; *mdn* = Median; *SD* = Standard Deviation.

Tables 18 and 19 display normal distribution for the PWS, OLP and WEL. The distribution of the three sets of summed instrument scores from these instruments were examined by their means and standard deviation. Curran-Everett and Benos (2004) described normal distribution as the majority of data points close to the mean with few data points as outliers. In all three instruments the mean and median were essentially equal. The data from the OLP, PWS and WEL were normally distributed, with roughly 68% of the variates lying ± 1 standard deviation.

The PWS had a mean of 141 and a standard deviation of 20, the OLP had a mean of 128 and a standard deviation of 16, and the WEL had a mean of 406 and a standard deviation of 37. The means indicate that overall the PWS and OLP are similar in measuring wellness in this Cadet sample while the WEL measurements are different in measuring wellness in the Cadet sample. The standard deviations indicate that the WEL (sd=37) measured a broader or different range of wellness, followed by the PWS (sd=20) and the OLP (sd= 16). This result occurred because the WEL has a very large standard deviation and the PWS and OLP a lesser standard deviation. This is helpful in understanding the different constructs of wellness and the varied results for the WEL, PWS, and OLP. It may also justify the lack of convergence of the WEL with both the PWS and OLP; it is difficult to converge on an instrument if it is measuring something different. For the PWS, 68% of the scores lay between 121 and 161, while for the OLP, 68% of the scores lay between 112 and 144, and finally, for the WEL, 68% of the scores lay between 369 and 443.

Sample range and standard deviation indicate the extent to which an instrument demonstrates variability in the study sample (Bland & Altman, 2003). The WEL has more variability in its measurement than the PWS and OLP, which were both similar in their mean scores and standard deviation. The WEL's greater variability may indicate a stronger wellness instrument that can discriminate levels of wellness in the sample population. By contrast, the PWS

and OLP, having a smaller standard deviation, had more data concentrated about the mean and might not contain the powerful discriminate power of the WEL in regards to measuring wellness.

For the PWS, OLP and WEL, scores for each instrument spanned the entire scale range, had mean scores near the scale midpoint, and had small floor and ceiling effects. These results indicate that these three scales are appropriate to the study sample. Further research is necessary to determine if one instrument is more appropriate for this population than another.

Five dimensions of the OLP and PWS did show significant correlations with the appropriate dimensions of emotional, psychological, intellectual, physical, and spiritual at T1 and T2. This was shown in the comparison of mean scores of cadets by dimension at T1 and T2 and across both instruments.

Strengths of the Study

The strengths of this study lie in the delivery of the study, its response rate, and the relevance of the studied construct, holistic wellness. This was a population-based web survey at USMA, West Point with first-year Cadets. The study evaluated, in a military population, the psychometrics of two instruments originally developed to measure wellness holistically in non-military populations. A standardized approach was used in administering the OLP and PWS to all participant Cadets in T1 and then dividing the Cadet participants into three groups (re-test, divergent validity, and convergent validity) in T2. The response rate was high for the participants in both T1 and T2, and strong psychometric properties were recorded for each instrument. Due to the quantitative nature of data, comparability of common measures could be done with ease across the research population and at both times of data collection.

Generalizations of this study are limited to similar populations, given the differences discussed in the culture and environment of the West Point cadet sample. Differences in attitudes

or perceptions impact wellness scores, measures of wellness are not consistent, context of life can change perspectives on wellness, validity and reliability affect outcomes, and the best format with this population is online data collection, which may not be the case for all samples.

A participant in this study may have a high-perceived level of wellness and, for example, may still use chewing tobacco each day. Smokeless tobacco contains more nicotine than cigarettes; and Bray et al. (2009) directly linked this habit with cancer and a multitude of cardiac health issues. In the military, 19% of males 18-24 use smokeless tobacco (Bray et al., 2009). This is not considered a behavior of wellness (Concotelli, et al., 2006); yet it may not be seen as unhealthy by the research participant because it is routine (Klockner & Matthies, 2004). Habits can be integrated into a working model of normative decision making until they become just a part of daily living (Klockner & Matthies, 2004).

Wellness is dynamic. A participant may define perceived wellness differently than the research tool (OLP/PWS) or from another person's view of it. Cadet participant scores with both the OLP and PWS were lower than scores within the physical and intellectual dimensions across T1 and T2. The wellness scores were collected from these participants during a stressful period with high external control over their social behavior immediately following CBT. The new Cadets' day is regimented, including when they wake up, how they eat (sitting at attention and putting the utensils down in between meals), completing daily rigorous training, and only speaking with permission. At the end of their first year with acceptance into the Corps of Cadets and social contacts established with peers and upperclassmen, some of the social pressures are removed. More wellness studies over time would be a useful indicator of cadets' wellness and changes to cadets' wellness as their life context changes.

The two instruments tested can each measure holistic wellness within the framework of the Army model. Not only did the study examine the wellness of the participants, it also examined wellness as it related to the broader issue of understanding the dimensions of wellness and testing the strength of the instruments in a large military population. Reliability indicates that an instrument will consistently measure wellness the same way each time it is used with this population (Litman, 1995). This is an important factor for looking at wellness progress over time with follow-up surveys. In the long term, reliability and validity considerations will assist in guiding the selection of instruments and/or dimensions that are measured in a group with similar demographics or comparing this population with the national norms of wellness.

Electronic recruitment and data collection created an efficient process and ultimately a successful result. The Internet can have a positive impact on the research process by making observational research, self-report surveys, and random-assignment experiments easier to conduct (Kraut et al., 2004). This electronic survey made the sample group more accessible and data collection economical, which in turn added validity to the study through a high response rate and facilitated statistical analysis.

Data from the two wellness instruments were electronically captured through a web-based tool called SurveyMonkey. In this study, the first-year Cadet population (n=768) at USMA was offered two wellness surveys via this mode. Responses to the surveys were visible immediately as Cadet participants completed surveys via the web link. The T1 surveys were initiated and completed (except for 58) within 48 hours. The data collection at T2 was completed within 30 hours. All results for T1 and T2 were visible in the “Analyze” tab for this study; and access to all of SurveyMonkey’s analysis features (such as charting, filtering, and crosstabs) made data viewing and mining easy. Results were easily exported to Excel and SPSS for statistical analysis.

Use of SurveyMonkey allowed for subject recruitment and data collection with no cost to complete the study. For a military researcher, the Internet support, including a SurveyMonkey account, was a free privilege. Two electronic invitations were sent via SurveyMonkey; the second invitation contained the link to the surveys. Use of this technique provided a large sample at no cost, and additional participants in this case would not have increased the cost. In this study, the directions, informed consent, and survey were administered in the electronic format without the researcher present. Cobanoglu, Warde, and Moreo (2001) estimated that the cost for a postal mail survey was \$1.93 per survey, compared to a marginal cost of close to zero for a web-based survey. The time investment to establish and administer the surveys on SurveyMonkey was minimal versus the time it would have taken to address envelopes, buy stamps, and print out the survey for participants.

Large Internet-based surveys are now cost effective for many researchers (Urban, Sultan, & Quales, 2000). For example, with this study, the cost of sending an electronic survey to the majority of the USMA Cadet class compared with a small subset of the list would be zero. Sampling of the first-year Cadet participants was outstanding in terms of representativeness for this study although there may have been some selection bias by those who chose not to respond. All participants had access to the web and an electronic address. This benefit showed immediately with the boost in the response rate and a quick return. According to Fricker and Scholau (2002, p. 3), "Greater survey accuracy can result when the sampling error is more than offset by a decrease in non-response and other biases, perhaps due to increased response rates." The combination of a large sample of the target Cadet population with the high response rates to the survey increased the validity of the results.

Another benefit of online research is that it allows experimental control and automation (Wright, 2006). The automation of the wellness surveys allowed the researcher to assign participants to one of three groups. The assignment was based on the last number of their social security number divided by thirds (0 through 3, 4 through 6, and 7 through 9). This technique worked with this group because the last four numbers (serial numbers) of the SSN were randomly generated when the person applied for their card. It is the first five numbers of the SSN that pinpoint geographic region and state (Gordon, 1991). This control in such a large sample group with an electronic platform allowed for a large and complex experiment within a single study.

There was greater control over the data collection in this experimental setting with the electronic survey as compared with a traditional paper survey (Fricker & Scholau, 2002). Within SurveyMonkey options are available to constrain responses or disallow continuance unless the participant answers the question. The automatic filtering function (found within SurveyMonkey) simplified finding missing data, as well as sorting through top responses and the number of participants, especially as this study split them into three groups. Also, since the responses were received incrementally, it allowed for the identification of patterns of responses and recognition of any outlier answers that needed to be addressed immediately.

Limitations of the Study

Noted limitations of this study included the design, theoretical and conceptual problems, quality of data, and lack of control during the data collection. With prior awareness of the secure web server and the scrambling of the IP address of each participant in the study, the WEL would have been administered within T1 across all three groups. Individuals would have remained matched in one time period. Naming the variables important to holistic wellness was difficult due to the variability in the review of literature and within the two wellness instruments tested. As

previously mentioned, the “gold standard” WEL did not show convergent validity with the OLP and PWS. The literature review suggested that the number and the content of dimensions in wellness may change depending on the instrumentation as well as the study sample.

The challenge in understanding the broad and multifaceted nature of wellness is difficult because there has been limited research on the construct (Harari, Waehler & Rogers, 2005). Studies to date on holistic wellness models suggest that the assessment of wellness is difficult because of its multi-dimensional and highly integrated nature. The overlapping of the emotional, social, and psychological dimensions in this study on the use of the PWS instrument highlighted this issue. Also the multiple overlapping definitions of dimensions and the naming and acceptance of dimensions for fit into a model is still being tested in all wellness instruments. This stems from the lack of systematic theory focused on wellness (Cowen, 1998; Harari, Waehler & Rogers, 2005). Dimensions need to be defined more precisely and measured prior to fitting them into a Wellness model.

The Internet also raises substantial challenges in terms of quality of data and the treatment of research participants. This can be due to sample bias, non-response errors, and lack of control over the research environment. Sample biases came directly from the research setting. In the sample population for this study, all participants had a computer (issued to all Cadets on their first academic day) and the majority consisted of young white males (17 through 23 years old). As indicated earlier, this is closely representative of the regular military soldier in regards to demographics of race and gender. All participants in this study also received a monthly salary from the Army and are considered to be on active duty during the four academic years.

The sample group at USMA, West Point makes it difficult to generalize results to most college campuses. The high percentage of varsity athletes, scholars, leaders, and achievers across

many areas of their life makes for a unique population in an undergraduate program. However, the remaining two academies (i.e., Navy and Air Force), as well as many top-tier schools in the nation, may provide an interesting comparative field in which to test these results. Even though such studies may demonstrate that overall population attitudes and demographics are adequately represented in such a sample, this argument is not sufficient to defend against the error in the interpretation of statistical data. Bachmann and Elfrink (1996) make this point as they argue that it is unwise to generalize from studies using such restricted sampling frames.

Non-response errors occurred in this study when data were not collected on individual survey questions (item non-response) for 59 Cadet participants who failed to complete more than 30 questions at T1. Groves (1989, p. 300) calls non-response “an error of non-observation.” Data collected from those Cadet participants who completed the survey may not represent the entire population being tested. The 58 participants who did not complete the survey were not considered in the statistical analysis. The incomplete response rate in this study was a small difference for the number compared to the number of survey respondents who did complete the survey (> 93 %). Higher complete response rates imply a lower likelihood of non-response bias (Beatty & Hermann, 2002). Dooley and Lindner (2003) also suggested that although a greater than 90% response provides greater confidence in the results, there are different ways to overcome this. They recommended not ignoring or deleting these responses, comparing the two groups of responders and non-responders, and resubmitting the survey to 20% of the non-responders. These techniques will be considered in future studies.

Conducting research online assists in the random choices of the voluntary participants in a study, as well as the selection and ordering of questions in a questionnaire (Beatty & Hermann, 2002). On the other hand, the researcher typically has less control over the environment in which

the research is conducted than in other experimental settings. Researchers often lose control over the process of the experiment during data collection (Urban, Sultan, & Quales, 2000). Insuring informed consent, explaining instructions, and conducting effective debriefings were all done in the preface to the survey before the surveys were offered. Once the web-based survey was sent to participants, there was no control over the data-collection setting. Cadets have a lot of freedom in where they study (the library, the academic halls, their barrack rooms, and some social café areas). Therefore some participants may have accessed the study in a quiet setting, while others did so in a noisy environment while distracted by other activities around them.

While the methods of online research may be changing, the criteria for evaluating research surveys remain largely unchanged. Sound procedures must continually be selected (Kraut et al., 2004). Decisions about measuring individual wellness are often based on results from such studies. Given the importance of these decisions, the design and psychometrics leading to the validity of the results is important.

The Holistic Care Movement

Florence Nightingale emphasized and prioritized patient care within a theoretical holistic framework. She is considered the first modern-day holistic caregiver to both publish and practice the tenets of holistic nursing care, regarding persons as multidimensional with biological, psychological, social, and spiritual dimensions (Dossey, 2010). Although Nightingale's work, letters, and books date back to the last century, they contain the core values of holistic practice that nursing continues to build upon. In the early 1900s, many Public Health nurses moved their practice from the patient home into medical buildings; nurse leaders, educators and researchers in the United States continued to prioritize holism in the nursing sciences (Dossey, 2000). Colleges of Nursing redefined the role of the hospital nurse to guide practice and distinguish the nursing

science of holistic care from the medical model of care. Although nursing developed and used evidence-based practices guided by holistic theory, policies and patient care continued to be defined by a biomedical clinical structure limiting the full application of holistic care.

The endorsement of the multidimensional approach by the World Health Organization in 1946 inspired some health care professionals to build on the work accomplished in both systems and holistic nursing theory. Systems theory provides a theoretical base for the holistic approach to patient care. It guides the approach to understanding an organization by examining its interrelated parts within the whole context (Urquhart, Lehmann, & Myers, 2010). The approach to understanding wellness in a person is similar: according to Clark (2012), “With holism, we consider the integrated whole to consider to understand the person or situation. We view everything in terms of patterns or processes that combine to form a whole, instead of seeing things as fragments, pieces, or parts.” (p. 7). Holistic nursing emphasizes the integration of body, mind, and spirit with the environment of the patient always taken into consideration (Cowling, 2011). These integrated dimensions work towards achieving wellness. Despite increased clinician interest in Holistic Wellness, the application of its tenets has continued to be a challenge.

The Future of Soldier Wellness

In response to the needs of soldiers in the current environment, an Army wellness initiative adopted the integrated holistic approach to measuring individual wellness. In 2009, the Army deployed an online wellness instrument to over a million soldiers with the Global Assessment Test (GAT). The GAT purports to measure both psychological strength and resiliency in individual Soldiers through the dimensions of emotional, family, social, and spiritual fitness (Lester, McBride, Bliese, & Adler, 2011). General Brenda Cornum was the lead in developing the Comprehensive Soldier Fitness (CSF) Program, integrating all of the components in order for them

to be deliverable electronically to all soldiers and have a positive and measurable impact (Peterson, Park, & Castro, 2011). As a soldier, physician, and researcher, General Cornum had the vision, knowledge, and experience to design the U.S. Army's CSF program (Stiehm, 1996). To accomplish this large undertaking, Cornum sought experts in positive psychology across several dimensions of wellness with a focus on diminishing PTSD by fostering resiliency and coping skills in soldiers.

The CSF is a comprehensive program designed to enhance an individual's (soldier and family members) strengths and resiliency in the psychosocial dimensions (Cornum, Matthews & Seligman, 2011). The CSF was planned and developed by experts collaborating from both civilian and military academia. These included accomplished scholars such as Barbara Frederickson (emotional dimension) and John Cacioppo (social dimension). Additionally, the project received guidance and support from the Samueli Wellness Institute. The Samueli Institute is a non-profit and scientific organization invested in holistic wellness. This organization develops and tests theories, applies integrative and complimentary interventions, and then measures these outcomes within a holistic framework of wellness. Samueli has accomplished significant work with the military especially in the area of PTSD and traumatic brain injury.

A review of emotional and social wellness research from the literature will highlight the work of Frederickson and Cacioppo and its importance to soldier wellness.

Table 20 shows the definition of concepts found during this updated review.

TABLE 20. *Review of New Wellness Concepts*

Concept	Definition	Process	Author
Resilience	The resources to withstand, recover, and/or grow in the face of stressors and changing demands.	Flexible adaptation to the changing demands of stressful experiences	Tugade & Frederickson (2004)
Holistic Health	Evolving toward an increased self-knowledge	Natural process of expanding one's consciousness so individuals recognize their inherent wholeness	Erikson (2009)
Flourishing	A state of optimum mental health through a "positivity ratio"	Through positive emotional, mental and physical activities	Frederickson (2006)

Resiliency and flourishing are found predominantly in Frederickson's (2002, 2004, 2006) work while holistic health is found throughout the CSF program and cited in the literature (Peterson et al., 2011) as relevant to the development of the GAT and CSF program.

Barbara Frederickson is an expert in the domain of emotional and psychological strength and resiliency (Peterson et al., 2011). Fredrickson (2006) developed the broaden-and-build theory of positive emotions. According to her theory, resiliency is strengthened through different life experiences, and the complete context (persons, place, and other events) of this experience is essential to incorporate in understanding personal resilience. She argued that a flourishing person has four distinct and necessary resources: intellectual, physical, social, and psychological. Intellectual resources allows the person to learn and solve problems, while physical resources allow the person to develop coordination and have strength and cardiovascular health. Social resources allow the person to bond with others, and psychological resources help the person to develop resilience and optimism while understanding him- or herself in the process (Frederickson, 2004).

Frederickson and Joiner (2002, 2004) measured the impact of positive emotions in different settings. Frederickson's broaden-and-build theory states that more positive emotions will create higher levels of cognition and coping with a multidimensional positive affect (emotional positivity) in the person. Frederickson (2002) tested this theory with college students (n=138). The findings showed that a positive affect enhances coping ability; the study also found this is not inversely related, for broad-minded coping does not enhance a positive affect. Another significant study of college students (n=57) demonstrated that resilient people are able to find positive meaning in stressful events. The participants were told they would have to prepare a speech and that a videotape of this would be shown to their peers. Multiple measures (psychological resilience, mood, cognitive appraisal, and physiologic response) were conducted using both established quantitative and qualitative instruments to gauge a holistic emotional response from the participants. The findings of this study showed that those with high psychological resilience also quickly recovered from some negative physiologic responses (increased heart rate) to the stressor. Frederickson's work is significant for soldiers, especially in regards to their baseline affect, impact on coping, their reaction to traumatic situations, and their ability to find positive meaning in the experience. The second study also highlights the importance of emotional positivity and not setting off a cascade of negative physiologic effects in the body that can lead to a loss of wellness.

John Cacioppo is an expert in the field of social neuroscience with an emphasis on social isolation, social behavior, and the process of measuring the variables that create them (Cornum, Matthews, & Seligman, 2011). In a review of 81 studies, a link was found between socialization and the physiologic response of multiple body systems (Uchino, Cacioppo, Kiecolt-Glaser, & Janice, 1996). Following up in another study by McDade, Hawkey, & Cacioppo (2006) measured demographics (e.g., gender, ethnicity, height, weight), behavioral actions (e.g., smoking, sleeping,

work, environment) and psychosocial behavior (e.g., loneliness, perceived stress) that coincided with the release of a stress protein in a sample group (n=188) of adults between 52 and 70 years old. Similar to the studies of Frederickson, negative social position and behavior create a negative physiologic response with the release of a stress protein.

Due to the strong link between the release of a stress protein in the body and measurable loneliness, Cacioppo, Hughes, Waite, Hawkley, and Thisted (2006) developed a follow-up study. Cacioppo et al., (2006) studied a diverse group of Caucasian, Hispanic, and African-American men and women (n=225) and affirmed the link between loneliness as a high risk factor for depression in adults over 40 years old. The link between loneliness and depression was reciprocal and worsened over time without intervention. The independent risk factors for increased loneliness included: 1) men; 2) lack of spousal support; 3) long working hours; and 4) limited social connections. Two instruments were used at separate time intervals to assess socialization and loneliness. The first study used a three-item survey of loneliness, and in the second study a 20-item instrument gauged levels of satisfaction with social contact and perceptions of the quality of that social contact (Cacioppo et al., 2006).

These studies have implications for soldiers' wellness. Soldiers who have not developed unit cohesion, receive a discouraging letter from home (e.g., pertaining to separation or divorce), or return from deployment can impact both their emotional and social behavior. Positive emotions offer both cognitive and emotional benefits, as do timely interventions.

Cultural Impact of Holistic Wellness

The GAT is part of the Army holistic wellness program called Comprehensive Soldier Fitness (CSF). The goal of the CSF program is to assist Soldiers to thrive in all dimensions of their life. The GAT is aimed at the individual soldier with 105 items focused on social and

psychological dimensions in which participants are given instant feedback on their scores. The GAT is an annual mandatory requirement by the military and is administered through a secure web server; the results are confidential. The program highlights the development of the individual soldier in determining his or her own self-awareness and flourishing in order to be resilient and psychologically strong (Cornum et al., 2011). The structured CSF program focuses on five “strengths”: physical, emotional, social, familial, and spiritual.

The strengths of the fitness program are built through four pillars: the GAT, Master Resilience Trainer (teaching for leaders on how to instill this resiliency in subordinates), Comprehensive Resilience Modules (online resiliency-building modules based on soldiers’ individual needs) and Institutional Training (structured training done by the unit). A report to the Secretary of the Army demonstrated program effectiveness with statistical measures over two years with improved resiliency and psychological health in measures from over 22,000 soldiers (Cornum et al., 2011).

A review of the GAT showed it to have high face validity, measuring some of the constructs associated with overall wellness (Firth & Smith, 2010) but no history of a peer-reviewed publication. The intellectual and physical dimensions are not included in the GAT, although the CSF program does separately address measurements of the physical dimension. An analysis of the GAT (Park, 2011) indicated that 90% of the items were from other validated instruments, and reliability was indicated by Cronbach’s alpha greater than .80 for each dimension after factor analysis in the pilot test. It has not been tested for predictive validity or tested in the clinical arena.

The philosophy of Army wellness states that self-concept and self-reliance in individuals must be developed in order to experience wellness. Wellness is understood through four basic dimensions described below based on the Army Well-Being Model. The model’s closed outer

circle contains the four overlapping equal dimensions of physical, material, spiritual, and mental with Well-Being (Wellness) in the center of the model. The physical dimension focuses on individual health and sense of wellness; this is accomplished by satisfying physical needs through a healthy lifestyle. Army researchers (DOD, 2001) stressed that it is important for individuals to maintain a certain level of physical ability. This allows the soldier to meet the demands of military daily life and to resist the disease associated with inactivity. The Army's second dimension, the material state, centers on essential needs such as shelter, food, and financial resources. In order to achieve and maintain good physical fitness, people should eat a balanced diet. Although the basic material needs are required to survive, financial resources are necessary to live life and not just exist in it. Financial security supports both resources and a productive, healthy lifestyle to the individual and the family (DOD, 2001).

The mental dimension centers on individual needs to learn, grow, achieve recognition, and be accepted by others. Further, mental wellness is described as the individual's ability to negotiate the daily challenges and social interactions of life, without experiencing undue emotional or behavioral incapacity. It can be affected by numerous factors ranging from stress to diseases and, more recently, multiple combat deployments. These deployments have had an adverse affect on wellness, particularly mental health in the form of PTSD. The Department of Defense (2001) found that the spiritual dimension may provide powerful support values, morals, strength of character, and endurance in difficult and dangerous circumstances. The spiritual dimension of the Army Well-Being model centers on a person's religious and philosophical needs. Table 21 shows the specific items of the PWS and OLP items and where they measure different dimensions in the Army Holistic Wellness Model.

TABLE 21. *PWS/OLP Items Supporting the Army Holistic Wellness Model*

Army Dimension	Army Definition	PWS Items Supporting the Army Dimension
Physical	Soldier's health and <i>perception</i> of wellness to meet the demands of military daily life and to resist disease	<p><i>Physical</i></p> <p>4-My physical health has restricted me in the past</p> <p>10-My body seems to resist physical illness very well</p> <p>16-My physical health is excellent</p> <p>22-Compared to people I know, my past physical health has been excellent</p> <p>28-I expect to always be physically healthy</p> <p>34-I expect my physical health to get worse</p>
Spiritual	Soldier's religious and philosophical needs. Provides values, morals, strength of character, and endurance	<p><i>Spiritual</i></p> <p>5-I believe there is a real purpose for my life</p> <p>11-Life does not hold much future promise for me</p> <p>17-Sometimes I don't understand what life is all about</p> <p>23-I feel a sense of mission about my future</p> <p>29-I have felt in the past that my life was meaningless</p> <p>35-It seems that my life has always had purpose</p>
Material	Need for shelter, food, and financial resources supports both resources and a productive, healthy lifestyle to the individual and the family	No items in PWS support this dimension
Mental	Ability to learn, grow, achieve recognition, and be accepted without experiencing undue emotional or behavioral incapacity	<p><i>Social Items</i></p> <p>3-Members of my family come to me for support</p> <p>9-Sometimes I wonder if my family will really be there for me when I am in need</p> <p>15-My friends know they can always confide in me and ask me for advice</p> <p>21-My family has been available to support me in the past</p> <p>27-In the past, I have not always had friends with whom I could share my joys, sorrows</p> <p>33-My friends will be there for me when I need help</p> <p><i>Emotional Items</i></p> <p>2-There have been times when I felt inferior to most of the people I knew</p> <p>8-In general, I feel confident about my abilities</p> <p>14-I sometimes think I am a worthless individual</p> <p>20-I am uncertain about my ability to do things well in the future</p> <p>27-In the past, I have not always had friends with whom I could share my joys and sorrows</p> <p>32-In the past, I have felt sure of myself among strangers</p> <p><i>Psychological</i></p> <p>1-I am always optimistic about my future</p> <p>7-I rarely count on good things happening to me</p> <p>13-I always look on the bright side of things</p> <p>19-In the past I have expected the best</p> <p>25-In the past, I hardly ever expected things to go my way</p> <p>31-Things will not work out the way I want them to in the future</p>

TABLE 21. *Continued*

Army Dimension	Army Definition	PWS Items Supporting the Army Dimension
Physical	Soldier's health and perception of wellness to meet the demands of military daily life and to resist disease	<p><i>Physical</i></p> <p>1-I experience physical discomfort that limits my daily tasks 3-I warm up before exercising 4-I schedule 15-20 minutes two or more times a week for strength training 5-I use alcohol and drugs as a way of handling stressful situations 6-I take action to minimize my exposure to tobacco smoke 12-I drink water throughout the day 19-The foods I eat are the ones I know are best for my body/health 23-I sleep more than six hours each night 25-I fall asleep quickly when I go to bed at night 27-I feel drowsy during the day 31-I am not the type of person who can change his/her diet 32-It is important for me to maintain a healthy diet 33-I don't have time to take care of myself 34-I expect to live a long and healthy life 35-I take personal responsibility for my health 36-I find it difficult to make the time for daily physical activity 38-I keep myself in good physical condition 40-I have energy I need to accomplish my personal and professional goals</p>
Spiritual	Soldier's religious and philosophical needs. Provides values, morals, strength of character, and endurance	<p><i>Spiritual</i></p> <p>1-When it comes to my own spirituality, I am not sure what I believe 2-My beliefs help me to deal with adversity in life 3-My spiritual beliefs give meaning to my life 4-My spiritual beliefs help me to deal with death 5-My spiritual beliefs help me to accept my weaknesses and shortcomings 6-My spiritual beliefs help me to cope with illness 8-My spiritual beliefs help me to feel loved 9-Adversity contributes to my spiritual growth 10-My spiritual beliefs have a positive influence on my relationship with others 11-I am satisfied with my spiritual life 12-My spiritual growth is an important life long process 13-I chose leisure time activities that enhance my spirituality 14-I am not sure who I am 16-I use prayer, meditation and or personal reflection time in my life</p>
Material	Need for shelter, food, and financial resources supports both resources and a productive, healthy lifestyle to the individual and the family	<p>3-It is easy for me to find healthy food to eat at work 5-My home environment is as comfortable as I would like it to be 7-I have control over the temperature at my work station 8-I have control over the lighting at my work station 9-My work environment encourages me to achieve adequate balance between work and family 17-I feel safe from violence in my neighborhood</p>

TABLE 21. *Continued*

Army Dimension	Army Definition	PWS Items Supporting the Army Dimension
Mental	Ability to learn, grow, achieve recognition, and be accepted without experiencing undue emotional or behavioral incapacity	<p><i>Social Items</i></p> <p>1-I have someone to turn to if I need help with daily chores 2-I have someone to turn to if I need love or affection 3-I am satisfied with the relationship I have with my partner 4-I am satisfied with my sex life 5-I often feel supported at work 6-I have a sense of control in my work 7-I find my work fulfilling 8-I feel support networks are helpful in reducing anxiety 9-I cannot improve my interpersonal skills 10-I have emotional intimacy in my sexual encounters 11-I participate in community activities 12-I contribute time each week to the community where I live</p> <p><i>Emotional Items</i></p> <p>1-I am satisfied with my personal life 2-I feel lonely 3-I feel that the future looks hopeful and promising 4-My daily life is full of things that are interesting to me 5-I feel tense 6-I generally enjoy the things I do 7-I feel loved and wanted 8-I feel that I have nothing to look forward to 9-I feel calm and peaceful 10-I feel downhearted and blue 11-I am able to relax without difficulty 12-I feel that my love relationships are full and complete 13-I feel relaxed 15-I feel so down in the dumps nothing can cheer me up 16-I expect good things to happen to me 17-I feel good about things I've done in the past 18-I am a happy person 19-I feel good when I think about what I hope to do in the future 20-I enjoy making plans for the future and working to make them a reality 21-I'm optimistic about my future</p>

The Army offers the Army Well-Being Model as a guide to military leaders to create and sustain a climate that is conducive to the achievement of individual wellness. Inherent in this is the belief that the well-being of the Army is inextricably linked to the wellness of soldiers (DOD, 2001). The Army believes that a holistic approach within a systems framework will be the most effective method to insure soldier wellness.

Future Research

This holistic and interactive process is in contrast to the military tradition of authoritarianism which creates group linear thinking and may limit expression by individual soldiers. In addition, the mandatory requirement may distort the results of the GAT as many soldiers may fear reprisal for answers to items or not trust the privacy of their responses.

Recommendations

Additional improvements to wellness research may include the testing of wellness instruments in different populations and improving usability of the web-based survey and its results. Prior to more field studies it would be important to assess all the wellness instruments and look at the specific scale development. In this study, it became clear that the construct of interest, wellness, was defined in a multitude of different ways. These definitions of wellness (e.g., emotional, intellectual, physical, psychological, spiritual, social, and environmental) guided the item selection for each instrument, and because there was not a clear line between some dimensions (e.g., psychological, emotional), they were highly interrelated. This caused difficulty with the lack of convergence with the WEL, and the study lost some of its predictive power in regards to wellness.

Additional revisions may be made to the wellness instruments, possibly reducing the required number of dimensions and items on each survey to make them more concise. These revisions and refinements may be based on theory or on further validity and reliability studies. These revisions may provide empirical support for the concept of holistic wellness and bring about a more useful metric.

Usability improvements would include enhancements to question access, interface specifications such as automatic scoring, and making results available in an understandable format

for both clinicians and patients. These upgrades may be validated with further formative evaluations of wellness theory, definitions of dimensions, and applicability across broad populations. Also, in a more sophisticated web survey, user metrics such as response latencies, changed answers, backing up, or other behaviors can be captured, permitting richer analysis of the process of the experiment and variations in its execution across subjects. A long term goal would be to build trust an automated virtual wellness advisor that cooperates with the clinicians and the patient towards optimum health outcomes. Some of these improvements could be implemented by vendors of the data collection products while others could be implemented in a straightforward manner by future researchers.

Implications for Nursing

A primary goal of health measurement is the determination of a patient's "wellness." When patients are described as being "well" or "healthy," there is an understanding among clinicians about what is being conveyed about that patient. Trump (2002) broadly described wellness as a multidimensional balance of attributes. In the literature, the attributes of wellness are discussed as emotional, intellectual, physical, social, and spiritual dimensions. However, wellness is more often described in the outpatient arena as a descriptor for patients (e.g., "42 year old well-appearing Asian female"), and an accompanying list of attributes are noted such as skin color, alertness, general appearance, and weight. The common reference of "well" in a note seems to be directly related to the physical measures of the traditional medical model.

Nurses are in unique positions to assist with dissemination of research findings, embrace holistic theories of wellness, and determine the best way to measure "wellness" in their patient populations. Presently, some of the most frequently studied publications with the PWS are: traumatic brain injury population (Bezner & Hunter, 2001), sexual identity (Ketz & Israel, 2002)

or illness (Kinney, Rodger, Nash, & O'Bray, 2003), college-age students (Sidman, D'Abundo, & Hritz, 2009), and specific women's groups by ethnicity (Goodwin, 2009). The most frequently studied holistic wellness publications with the OLP are college-aged students (Renger et al., 2002) and athletes (von Guenther, 2007). The application of these instruments to other groups of patients will further the development of the wellness construct.

Holistic wellness, its dimension, instrumentation, and ultimately outcomes in the outpatient setting rely on a foundation of research-based evidence. Although new measurement tools depend on applying evidence, facilitating them into the practice setting is often challenging (Conger, 2002). Nursing leaders should be familiar with knowledge utilization. Davidson et al., (2006) suggested that nursing focus on the study of how research findings are adopted and implemented. Nursing can continually move the focus of health care from a physical model of health towards a holistic model of wellness. Using knowledge-utilization research narrows the gap between researchers and providers to move it to the point of patient care. Although Snow (2002) notes that understanding the implications of wellness research in patient care is important. Tregunno (2005) stresses applying the strategies that will put them into action. Moore and Mellow (2003) indicated that such strategies include understanding and disseminating the present research on wellness, its impact in the outpatient setting and the process to put them into sustainable action.

Nurses use knowledge in an effort to provide scientifically sound and humanistic patient care. A connection at all levels of individual and organizational practice, as well as interest and desire, is needed to understand, measure, and achieve wellness.

Conclusions

As a result of the transformation of health care in the United States, the military is shifting to focus on more than physical parameters when caring for patients. This is evident in the Military

Holistic Model of Wellness and the receptiveness to this study at the Army's premiere academic institute. The United States Military Academy, West Point was supportive of this study and two prior published wellness studies (Myers & Bechtel, 2004; Gibson & Myers, 2006) at this location.

Clinicians try routinely to guide people to a healthier lifestyle by gauging their current wellness status. The value of measuring holistic wellness in the outpatient setting is supported by the increasing number of professional organizations integrating these concepts into practice and research. These organizations include the American Academy of Family Practice Physicians, the U.S. Army, and the American Holistic Nurses Association. Each has its own model of wellness, but none has an instrument to measure wellness.

When selecting an instrument for use in clinical practice and research, the instrument's suitability depends on the assessment of intended health constructs, as well as its measurement efficiency and its user friendliness (Evers et al.,1998). To guide this decision, the PWS and the OLP were compared with regard to their psychometric properties and usefulness in the military outpatient arena. Both the OLP and PWS appear suitable for use in future studies for measuring wellness in Cadet soldiers. The PWS and OLP Wellness instruments are both important contributions to the body of literature regarding health and quality for military students at West Point. The measures provided by these instruments provide important data that helping professionals can use to assist young soldiers in their multidimensional wellness development. A wellness model that also has an instrument to measure its components has potential for both practical application and empirical research and is relevant to this population and setting because of its inclusive and adaptable nature.

The OLP and PWS are promising new instruments for measuring holistic wellness in the USMA first-year Cadet. Both instruments are free for use by the public. The OLP and PWS are

easy to use, are acceptable to an outpatient environment, and meet stringent reliability and validity criteria. Each is differentiated by its theoretical basis, naming of the wellness variables, number of questions, and scoring of each instrument. Both instruments contain scales that assess the impact of the different dimensions on the person's wellness; however, the naming of the variables important to holistic wellness varies slightly by instrument.

The experience to date with the OLP has been documented in two publications. The OLP is also used exclusively as a wellness survey with clients at Canyon Ranch, a wellness-focused commercial spa. The PWS has been documented in thirteen publications in English. The PWS has been translated into seven different languages and there is a version for youth (PWS-Y) in English, Chinese, and Spanish. Studies to date for both the OLP (Renger et al., 2000; von Guenther, 2007) and PWS (Adams, Bezner & Hunter, 2001; Adams, Bezner & Steinhardt, 1997; Byron, 2009; Kinney, Rodger, Nash & O'Bray, 2003) have yielded content, concurrent, criterion, construct, and predictive evidence of validity. Their use in other contexts and with different groups outside an academic military environment requires further research. Most appealing for the PWS is its brevity (36 items) and simplicity in scoring. The OLP offers flexibility in adjusting the scale to eliminate some of the items with thoughtful consideration of the population and still provide a reliable and valid instrument (von Guenther, 2007).

Studies of wellness and its consequences for the individual and for society should include measurements by a multidimensional instrument. When taking the social dimension of holistic wellness into account, it is also important to analyze the data in a cultural framework (Finlay & Ryan, 1996). Women and men, although subject to some of the same conditions at the military academy, may respond to the experience differently (Jansen, 2005). Consequently, it is appropriate

to examine demographics and institutional culture in data analyses to find the most appropriate wellness instrument.

Overall, both the OLP and PWS showed consistency with previous research on holistic wellness in the outpatient setting. The literature review demonstrated that there is an active search for an instrument to measure holistic wellness and a growing appreciation for its application with people in a variety of settings. A review of wellness models and instrumentation revealed several opportunities for original contributions. Among these opportunities was the need for additional experimentation, particularly with the dimensions of wellness and instrument use in different populations. Researchers have shown empirically that wellness instruments are not necessarily effective in all specific, well-defined contexts (LaFontaine, Neisen, & Parsons, 2006). Further, this study compared two specific instruments and identified the strengths and limitations of each for use in a particular population. More studies are needed of other instruments and other populations. It remains to be seen whether clinicians themselves will find the data from one or another tool more helpful.

In summary, continued research to contribute to holistic wellness science were identified from the literature review and the outcomes of this study. These research opportunities included wellness theories, definition of the dimensions of wellness, and instrumentation, each addressed by this dissertation research.

APPENDIX A: USMA IRB APPROVAL LETTER

APPROVAL LETTER FROM MAJ Harold LaRock: Chief, IRB, USMA, West Point, NY

-----Original Message-----

From: LaRock, H. MAJ OPA [<mailto:Harold.LaRock@usma.edu>]
Sent: Friday, October 10, 2008 10:07 AM
To: Schafer, Maureen L LTC WRAMC-Wash DC
Cc: Reddington, Jane M KACH-West Point; Keith, B. DR AAD
Subject: RE: Research (UNCLASSIFIED)

LTC Shafer,

USMA accepts the decision of other IRBs of institutions with either a DoD Assurance or an FWA Assurance.

Sincerely,

HAROLD L. LA ROCK, II
Major, Field Artillery
Chief
Institutional Research and Analysis Branch
United States Military Academy
646 Swift Road
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Office: (845) 938-7382
DSN: 688-7382
<http://www-internal.usma.army.mil/opa/>

Classification: UNCLASSIFIED
Caveats: NONE

APPENDIX B: UNIVERSITY OF ARIZONA –
HUMAN SUBJECTS PROTECTION PROGRAM – APPROVAL LETTER

PIResponsibilities-05-21-09

**PRINCIPAL INVESTIGATOR RESPONSIBILITIES
INFORMATION SHEET**

Congratulations! Your project has been approved or re-approved. To promote the *Responsible Conduct of Research*, the following information is provided for your reference and to retain with your study documents or in your site binder. Below are some of the important elements for conducting your study with regards to the Human Subjects Protection Program (HSPP). For a more thorough understanding of your responsibilities and the most current forms, visit the HSPP web site at <http://www.irb.arizona.edu>.

Topics: "Changes to the Project," "Unanticipated Problem or Adverse Event Reporting," "Renewal, Withdrawal or Conclusion of the Project"

CHANGES TO THE PROJECT (AMENDMENTS)

The IRB must approve all modifications to the research activities and applications prior to implementation unless it is to eliminate apparent immediate hazards to the participant. *Note: Planned protocol deviations (including sponsor or PI-approved waivers) require prior IRB approval. Contact our office for assistance.*

- Changes include: protocol amendments, local procedural changes, personnel changes, recruitment material, form additions/changes (consents, questionnaires), enrollment status change, etc.
- Use the appropriate Request for Amendment Form, downloadable from our website. No additional cover letter is necessary.
- Brief Description of the Amendment – List:
 - Substantial changes (e.g. procedures, subject selection, risk/benefit ratio, local study conduct, sponsor change, local personnel change, sub-studies, questionnaires/surveys, etc.)
 - Non-substantial changes (editorial changes [correcting page numbering, grammar], administrative changes [updating sponsor contact info], and clarifications [re-wording of sections with no change in the procedure].)
- Rationale for the Amendment – Discuss the rationale for changes, how local procedures are impacted, change to the risk/benefit ratio, how local subjects are affected. If no change, state why.
- Do not cut and paste the sponsor's list of changes into the Request for Amendment Form.
- Highlight all changes to revised forms. If yellow is not used, include a clean copy of consenting instruments for approval stamp.

Form must be signed by a PI or a Co-PI or materials will be returned.

UNANTICIPATED PROBLEM OR SERIOUS ADVERSE EVENT REPORTING

Unanticipated Problems Involving Risks to Subjects or Others (which may include accidental or inappropriate disclosure of confidential information, serious adverse events, new risk information, complaints relating to the study from any source, etc.) need to be reported to the Human Subjects Protection Program office (see reporting requirements in our Policies and Procedures found at www.irb.arizona.edu under Sections II.E, II.E.1, III.I, and III.I.1).

- Use the Unanticipated Problem Report Form. No additional cover letter is necessary.
- Brief Description of the reportable item:
 - Provide any relevant identification numbers or dates on reports received from sponsor or other non-local entity (if applicable)
 - Description of reportable item and pertinent subject history (if known).
- Determination of classification as an unanticipated problem that requires reporting (respond to 3 questions):
 - Unanticipated in nature, frequency or severity
 - Related or possibly related to participation in the research
 - Suggests that the research places subjects or others at a greater risk of harm (than previously known)
- UA PI's assessment of local impact (proposed revisions to study documents/procedures):
 - If no changes to the consenting instruments are being made, state reason (e.g., only new subjects would be impacted and study is closed to enrollment, risk is already in currently approved form, risk only impacts subjects actively receiving study drug and no local subjects are being actively treated).

Form must be signed by a PI or a Co-PI or materials will be returned.

PIResponsibilities-05-21-09 continued

NON-COMPLIANCE

Failure to comply with Federal regulations, IRB Policy, the determinations or requirements of the IRB or the requirements of VA guidance is considered to be non-compliance. This includes protocol deviations, protocol violations, use of unapproved consent instruments, incomplete documentation of informed consent, use of unapproved translations of previously approved consent instruments or study materials, use of unapproved study materials/methods, etc. Non-compliance must be reported to the Human Subjects Protection Program office (see reporting requirements in our Policies and Procedures found at www.irb.arizona.edu under Sections II.C and II.C.1). *Note: Deviations that do not increase risk or decrease benefit, affect the participant's rights, safety, or welfare and/or affect the integrity of the resultant data may be reported on a quarterly basis OR after each monitoring visit (if study is monitored by a data safety monitor or an outside entity). All others are to be reported within 10 business days of knowledge of occurrence.*

- Use the Study Related Problems Report Form (to be superseded by the Protocol Deviation/Violation Report Form-circa June 2009). No additional cover letter is necessary.
- Brief Description of the reportable item:
 - Description of reportable item and assessment of causality.
 - Provide any relevant reports concerning the non-compliance received from data safety monitor, sponsor or non-local entity (if applicable)
- Provide proposed management plan to avoid future recurrence. Plan may include:
 - Re-training of research personnel
 - Addition of double-check procedure and/or use of checklists to ensure future compliance
 - Provision of educational materials for study subjects and/or additional reminders regarding study procedures/visits
 - Submit any revised/new study documentation for approval prior to use.

Form must be signed by a PI or a Co-PI or materials will be returned.

RENEWAL, WITHDRAWAL, OR CONCLUSION OF THE STUDY

Please Note!! It is the responsibility of the Principal Investigator to provide the HSPP office with timely materials for *renewal, withdrawal or conclusion* of a project. A reminder of when your project is due for review will be issued by our office, however it is only a reminder. Please take responsibility for submitting review materials 30 - 45 days prior to the current project approval expiration date. Failure to provide continuing review materials prior to the current expiration date will result in *administrative closure* of your project. If your study is being *withdrawn or concluded*, the required documentation may be submitted whenever all study activities have stopped or been completed (even if well before the current expiration date).

- Review the Guidelines for Continuing Review (detailed explanation of forms, activity status categories and attachment requirements) found on the HSPP website, www.irb.arizona.edu, under the Forms Online, Continuing Review menu items
- For renewal of project approval, submit the following 30 - 45 days before expiration of your current project approval.
 - Current version of the Continuing Review Form (received by mail or printed from IRB website) - requires reporting of current activity status, enrollment numbers, financial interest
 - Current version of the Continuing Review Report (download from our website) - depending on study status, may require reporting of progress to date, changes that have been made during reporting period, unanticipated problems or serious adverse events submitted during report period, abstract of current study purpose/procedures/population, summary of review of relevant literature published during report period
- For *withdrawal* of project, submit the following (only if no enrollment OR activities involving receipt/use of tissue or data collected from human subjects has occurred or will occur)
 - Current version of the Continuing Review Form
- For *conclusion* of project, submit the following if all study activities (including data analysis and response to sponsor queries) have been completed.
 - Current version of the Continuing Review Form interest
 - Current version of the Continuing Review Report (and any indicated attachments)

Form must be signed by a PI or a Co-PI or materials will be returned.

APPENDIX C: UNIVERSITY OF ARIZONA –
HUMAN SUBJECTS PROTECTION PROGRAM – EXPEDITED NEW PROJECT

Schafer 09-0315-02 Letterhead Expedited New Project



Human Subjects
Protection Program

1618 E. Helen St.
P.O. Box 245137
Tucson, AZ 85724-5137
Tel: (520) 626-6721
<http://www.ihb.arizona.edu>

HSPP Correspondence Form

Date: 06/08/09

Investigator: Maureen Schafer, PhD Candidate

Advisor: Judith Effken, PhD

Project No./Title: 09-0315-02 Assessing Soldiers' Wellness Holistically: An Evaluation of Instruments and Data Presentation Methods Applicable to Primary Care

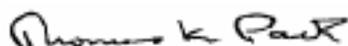
Current Period of Approval: 06/08/09 - 06/07/10

IRE Committee Information	
<input type="checkbox"/> IRB1 - IRB00000291 <input checked="" type="checkbox"/> IRB2 - IRB00001751 <input type="checkbox"/> IRB3 - IRB00003012 <input type="checkbox"/> IRB4 - IRB00005448 <input type="checkbox"/> Administrative Action FWA Number: FWA00004218	<input type="checkbox"/> Full Committee Review <i>1st review - mm/dd/yy</i> <i>Conditions met - mm/dd/yy</i> <input checked="" type="checkbox"/> Expedited Review - 06/08/09 <input type="checkbox"/> Facilitated Review - mm/dd/yy <input type="checkbox"/> Administrative/Exempt Review - mm/dd/yy
Nature of Submission	
<input checked="" type="checkbox"/> New Project <input type="checkbox"/> Amendment <input type="checkbox"/> Unanticipated Problem Involving Risks to Subjects or Others <input type="checkbox"/> Response to IRB Committee <input type="checkbox"/> Other (define):	<input type="checkbox"/> Continuing Review <input type="checkbox"/> Protocol Deviation/Violation/Waiver <input type="checkbox"/> Non-Compliance <input type="checkbox"/> Not Applicable
Documents Reviewed Concurrently	Appr: Approved Ack: Acknowledged Rev: Reviewed
<input checked="" type="checkbox"/> Project Review Form (dated 06/08/09)	Appr
<input checked="" type="checkbox"/> Consenting Instruments: Disclosure Form (Military) (version 05/29/09) Disclosure Form (Clinical) (version 5/29/09) Re-consent: <input type="checkbox"/> All <input type="checkbox"/> Current Only <input type="checkbox"/> Not Required	Appr
<input checked="" type="checkbox"/> VOTF (dated 04/03/09)	Appr
<input checked="" type="checkbox"/> Recruitment Materials: Clinic Staff email, Military email	Appr
<input checked="" type="checkbox"/> Surveys/Questionnaires: Wellness, Optimal Living, Beck Dep., Lifestyle, Soldier Wellness, Clinician Comparison	Appr
<input checked="" type="checkbox"/> Other (define): Automated response to positive Beck Depression Inventory	Appr



Committee/Chair Determination
X Approved as submitted
Additional Determination(s)

- **Expedite Approval (45 CFR 46.110 Category 7):** Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.
- **Waiver of Documentation of Informed Consent (45 CFR 46.117(c)(2)):** the research involves no more than minimal risk of harm to subjects and involves no procedures for which written consent is normally required outside of the research context (Project involves West Point students completing several questionnaires anonymously through Survey Monkey regarding holistic wellness and Clinicians reviewing the results of these anonymous questionnaires in different computerized formats in order to compare which format provides the best outcome).



Thomas K. Park, PhD
Co-Chair, IRB 2 Committee
UA Institutional Review Board

TKP:lec
cc: Departmental/College Review Committee

Reminders: Continuing Review materials should be submitted 30-45 days prior to the expiration date to obtain project re-approval

- Projects may be concluded or withdrawn at any time using the forms available at www.irb.arizona.edu.
- No changes to a project may be made prior to IRB approval except to eliminate apparent immediate hazard to subjects.
- Original signed consent forms must be stored in the designated departmental location determined by the Department Head.

APPENDIX D: RECRUITMENT MATERIAL – PRE-STUDY

Recruitment Material sent one week prior to the Wellness Study.

Thank you for considering participation in the Wellness Study. I am an Army Nurse studying the best way to measure wellness in our active duty soldiers. Specifically, I am studying wellness, post traumatic stress disorder and its impact on soldier wellness; and ultimately readiness in the battlefield.

I am requesting your time to take two short questionnaires on line, three days apart on Survey Monkey. A web link will be sent on day one and day three by the Army computer server to all first year Cadets at USMA, West Point. It will take approximately 20 minutes for the longest survey to be completed. An electronic reminder will be sent by the computer system at the three day mark.

To participate in this study please follow the attached link to the survey. The wellness survey will be self-administered on Survey Monkey. All information will be collected through this account. Your identity will not be attached to your responses; rather your responses will be attached to your number.

Thank you for consideration of this request.

mschafer@nursing.arizona.edu

Maureen L. Schafer

U. S. Army, Army Nurse

Doctoral Student, The University of Arizona

APPENDIX E: UNIVERSITY OF ARIZONA –
HUMAN SUBJECTS PROTECTION PROGRAM – SUBJECT’S DISCLAIMER FORM

APPROVED BY UNIVERSITY OF AZ IRB
THIS STAMP MUST APPEAR ON ALL
DOCUMENTS USED TO CONSENT SUBJECTS,
DATE: 06/08/09 EXPIRATION: 06/07/10

SUBJECTS DISCLOSURE FORM

Military Form viewed prior to the start of Study 1-electronically on the web

"Assessing Soldiers' Wellness Holistically: An Evaluation Of Instruments And Data Presentation Methods Applicable to Primary Care"

You are being invited to voluntarily participate in the above-titled research study. The purpose of the study is to identify a questionnaire for measuring holistic wellness in soldiers and determine an effective way to present data collected by that instrument. The definition of holistic is the emotional, intellectual, physical, psychological, social, and spiritual dimensions which make up the total system of the individual. You are eligible to participate because you are an active duty soldier stationed at the United States Military Academy (USMA), West Point, New York. The number of participants recruited for this survey is 1200 USMA Cadets.

If you agree to participate, your participation will involve completing two surveys (of about 171 questions), each survey should take no more than 15 minutes to complete. You may choose not to answer some or all of the questions. You will be randomly placed into one of three groups when you log onto the web site to take the surveys. Two of the groups will take only surveys measuring indicators of holistic wellness; the third group will take a survey measuring indicators of holistic wellness and another survey measuring indicators of depression. Your name will not appear on your completed survey, no identifying information is being collected as part of this survey.

Any questions you have will be answered. You may contact the principal investigator by phone or email and your query will be answered in like manner within 24 hours. You may leave the survey at any time before completing it without loss of any benefit to which you would otherwise be entitled. On completion of a survey, Soldiers may be identified at risk for depression and/or suicidal ideation. These soldiers will receive an automated electronic message encouraging them to seek medical care immediately to include a 24 hour phone number and an electronic web link for other medical options.

There is minimal risk from your participation and no direct benefit from your participation is expected. There is no cost to you except for your time and you are not compensated monetarily or otherwise for participation in this study. Only the principal investigator will have access to the information that you provide. The military will not have access to this data in any form that may identify the individual.

You can obtain further information from the principal investigator, Maureen Schafer, MSN, PhD Candidate at The University of Arizona via phone (202) 738-7143 or e-mail at mschafer@nursing.arizona.edu

If you have questions concerning your rights as a research subject, you may call the University of Arizona Human Subjects Protection Program office at (520) 620-6721, or the HSPP toll free number of 1-800-278-1455.

By participating in the survey, you are giving permission for the investigator to use your information for research purposes.

Thank you.

Maureen Schafer, MSN, PhD Candidate,
College of Nursing, The University of Arizona

A scanned copy of this disclosure with the IRB approval stamp will be viewed on-line.

APPENDIX F: UNIVERSITY OF ARIZONA – HUMAN SUBJECTS PROTECTION
PROGRAM – SUBJECT’S DISCLAIMER FORM, READABLE COPY

SUBJECTS DISCLAIMER FORM, Wellness Study

Testing of two holistic wellness Questionnaires

You are being invited to voluntarily participate in the above-titled study. The purpose of the study is to identify a questionnaire for measuring wellness holistically in soldiers and determine an effective way to present data collected by that instrument. You are eligible to participate because you are an active duty soldier stationed at a south west Army post. By participating in the survey, you are giving permission for the investigator to use your information for research purposes.

Your participation will involve completing a survey (of about 171 questions), which should take no more than 15 minutes. You may choose not to answer some or all of the questions. Your name will not appear on your completed survey, no identifying information is being collected as part of this survey.

Any questions you have will be answered. You may leave the survey at any time before completing it. There are no known risks from your participation and no direct benefit from your participation is expected. There is no cost to you except for your time and you are not compensated monetarily or otherwise for participation in this study.

Only the principal investigator will have access to the information that you provide.

You can obtain further information from the principal investigator, Maureen Schafer, at (202) 758 7143. If you have questions concerning your rights as a research subject, you may call the University of Arizona Human Subjects Protection Program office at (520) 626-6721. If you would like to contact the Human Subjects Protection Program via the web, please visit the following web site: <http://www.irb.arizona.edu/suggestions.php>.

Thank you.

Maureen Schafer, Doctoral Student
College of Nursing, University of Arizona
Tucson, AZ 85719

A scanned copy of this disclaimer with the IRB approval stamp is available [here](#).

[Go to survey](#)

APPENDIX G: PRIMARY CARE PTSD SCREEN

Primary Care PTSD Screen

In your life, have you ever had any experience that was so frightening, horrible, or upsetting that, in the past month, you*

1. Have had nightmares about it or thought about it when you did not want to?

YES NO

2. Tried hard not to think about it or went out of your way to avoid situations that reminded you of it?

YES NO

3. Were constantly on guard, watchful, or easily startled?

YES NO

4. Felt numb or detached from others, activities, or your surroundings?

YES NO

Current research suggests that the results of the PC-PTSD should be considered "positive" if a patient answers "yes" to any three items.

APPENDIX H: OPTIMAL LIVING PROFILE INSTRUMENT SAMPLE

The following questions have been designed to assess your present physical health and wellness status. When the term “work” is used, it refers to employment with monetary compensation. Please respond by checking the one response that best describes how you feel about each item.	Very Frequently	Often	Occasionally	Rarely	Almost Never	N/A
1. I experience physical discomfort that limits my daily tasks						
2. Outside my job, I am physically active for a total of at least 20 minutes every day						
3. I warm up before exercising						
4. I schedule 15-20 minutes two or more times a week for strength training (weights, dynabands, etc.) as part of my exercise						
5. I use alcohol and/or drugs as a way of handling stressful situations.						
The following questions have been designed to assess your present emotional health and wellness status. Please respond by checking the one response that best describes how you feel about each item.	Very Frequently	Often	Occasionally	Rarely	Almost Never	
1. I am satisfied with my personal life						
2. I feel lonely						
3. I feel that the future looks hopeful and promising						
4. My daily life is full of things that are interesting to me						
5. I feel tense						
6. I generally enjoy the things I do						
The following questions have been designed to assess your present spiritual health and wellness status according to your own personal definition of spirituality.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	
1. When it comes to my own spirituality, I’m not sure what I believe						
2. My spiritual beliefs help me to deal with adversity in life						
3. My spiritual beliefs give meaning to my life						
4. My spiritual beliefs help me deal with death						

APPENDIX I: PERCEIVED WELLNESS INSTRUMENT SAMPLE

The following statements are designed to provide information about your perception of wellness. Please carefully and thoughtfully consider each statement, then check the one response option with which you most agree.

Check the response from 1 to 6	Very Strongly Disagree					Very Strongly Agree
I am always optimistic about my future	1	2	3	4	5	6
There have been times when I felt inferior to most of the people I knew	1	2	3	4	5	6
Members of my family come to me for support	1	2	3	4	5	6
My physical health has restricted me in the past	1	2	3	4	5	6
I believe there is a real purpose for my life	1	2	3	4	5	6
I will always seek out activities that challenge me to think and reason	1	2	3	4	5	6
I rarely count on good things happening to me	1	2	3	4	5	6
In general, I feel confident about my abilities	1	2	3	4	5	6
Sometimes I wonder if my family will really be there for me when I am in need	1	2	3	4	5	6

*There are no qualitative descriptors for the selection of 2 through 5.

APPENDIX J: WELLNESS EVALUATION OF LIFESTYLE INSTRUMENT SAMPLE

Convergent Validity

For each of the following items, circle the letters that represents the statement below that is most true of you

- A Strongly Agree
- B Agree
- C Undecided or Neutral
- D Disagree
- E Strongly Disagree

1. Leisure activities are an important part of my life	A	B	C	D	E
2. I am satisfied with how I cope with stress	A	B	C	D	E
3. I most always wear my seat belt when riding in a car	A	B	C	D	E
4. I frequently see humor even when engaged in a serious task	A	B	C	D	E
5. I avoid the use of illegal drugs	A	B	C	D	E
6. Generally, I feel support from others with respect to my gender	A	B	C	D	E
7. Sometimes I use humor that embarrasses others	A	B	C	D	E
8. I avoid the use of alcohol or limit my consumption to no more than two drinks per day	A	B	C	D	E
9. I engage in leisure activities which I find personally satisfying	A	B	C	D	E
10. I value myself as a unique person	A	B	C	D	E
11. I have come to be at peace with my eventual death	A	B	C	D	E
12. I have friends who would do most anything for me if I were in need	A	B	C	D	E

APPENDIX K: BECK DEPRESSION INVENTORY INSTRUMENT SAMPLE

Divergent Validity

Read each question carefully, and circle the one statement in each that best describes the way you have been feeling during the past two weeks, including today.

1. Sadness

- 0 I do not feel sad.
- 1 I feel sad much of the time
- 2 I am sad all of the time.
- 3 I am so sad or unhappy that I can't stand it.

2. Pessimism

- 0 I am not discouraged about my future.
- 1 I feel more discouraged about my future than I used to be.
- 2 I do not expect things to work out for me.
- 3 I feel my fortune is hopeless and will get only worse.

3. Past Failure

- 0 I do not feel like a failure.
- 1 I have failed more than I should have.
- 2 As I look back I see a lot of failures.
- 3 I feel I am a total failure as a person.

4. Loss of Pleasure

- 0 I get as much pleasure as I ever did from the things I enjoy.
- 1 I don't enjoy things as much as I used to.
- 2 I get very little pleasure from the things I used to enjoy.
- 3 I can't get any pleasure from the things I used to enjoy.

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