

Scientists in the Service

October 09, 2003

Psychological Science Onboard a Submarine

By Jeff Dyché

I didn't join the Navy to become a psychologist. I don't know anyone who has. Most people join the armed services to learn a skill or trade, or to obtain a higher academic degree, knowing the military will cover the costs to bring those goals to fruition. But I already had my PhD before even interviewing with the Navy; they wouldn't look at me without one, just like in academia. My interview for the Navy, particularly here at the Naval Submarine Medical Research Laboratory where I am a research psychologist in the submarine medicine department, was no different than any college interview for assistant professor. I simply presented my dissertation work on the effects of magnetic fields on sleep and melatonin in rats. The main difference was after the interview. For one thing, I actually got this job. Plus, when I accepted the Navy's offer, I had to agree to don a khaki uniform – or blue or white, depending on the season, but always polyester – and become a commissioned officer in the US Navy.

My background is in biological psychology and basic research. But in the Navy, most research by experimental psychologists is applied. Even though I still have a major interest in neuroscience, I've found during my short time as a researcher at NSMRL that I was more and more a human factors scientist solving operational problems on multidisciplinary research and development teams. However, my grounding in basic science brings a unique perspective to the research that I am involved with and, even as a junior officer, I have had the opportunity to be primary investigator on applied projects that cost over half a million dollars. I think it is funny that, just a few years ago, when I received a summer dissertation fellowship worth \$3,000, I thought I was fat rich!

My main job is to evaluate the sleep, circadian rhythms, and performance of Navy submariners. My colleagues and I have surveyed hundreds of submariners on how much sleep they typically obtain during a submarine deployment as compared to when in port. The submarine environment is a hotbed of opportunity for a sleep researcher. Most of these sailors are shift workers in an environment that is devoid of auditory cues, very similar to true isolation studies performed at civilian sleep research laboratories. It is difficult and costly to perform this type of research in an on-shore laboratory, yet a submarine creates this novel environment every day. Moreover, submariners routinely work for six hours then are off for 12 hours; these shifts repeat for the duration of the journey. So each "day" is only 18 hours. Couple all that with a crew of more than 120 in a space akin to a three-bedroom home, and you have an interesting scientific environment.

One thing we are currently investigating is how a new 24-hour watchstanding schedule might improve the performance and health of submariners. We are testing this new schedule both in traditional sleep laboratory simulations and on board actual submarines. Only a handful of psychologists in the world

have been underway on a fast-attack nuclear submarine, and it is a privilege to be one of them.

While this may seem quite removed from academia, I still have one foot in the ivory tower. I am a visiting assistant professor at Connecticut College and teach a course on sleep research. This way I can still interact with academic psychologists and students of psychology. I am also pleased that a number of my future Navy projects involve collaborations with academicians at major research universities.

Most people don't think of research psychology when speculating about life in the armed services, but there is a long history of behavioral scientists serving our country, back to the days of WWI. Today there are Navy psychologists serving in the campaign in Iraq. I am certain the Navy will continue to use the skills of psychological scientists well into the future.

A Military Training Mission

By May Throne

My work with the US Army Research Institute for behavioral and social sciences began when I participated in a consortium research fellowship while working on my PhD in experimental psychology at the University of Louisville. Although I had no previous military experience, the fellowship was an excellent introduction to applying psychological principles to improve soldier training. Based on this experience, I was hired by the Human Resources Research Organization where I spent the majority of my time working with a team developing measurement techniques of human performance, especially automated measures of team processes, as well as developing a user-friendly interface for building measure outputs. These measures were implemented in several Army future battlefield concept experiments. In 2001, I was hired as a research psychologist at ARI.

ARI is the primary Army laboratory conducting research, studies, and analysis focused on human training and performance. By developing a scientific understanding of soldiers and the tasks they perform, ARI helps the Army recruit and retain the best people, and then maximizes their individual and organizational effectiveness through training. Both individual and team training become increasingly important as soldiers, leaders, and units rely on advanced equipment and technological systems to accomplish their missions.

The mission of ARI's Armored Forces Research Unit, also at Fort Knox, is to support Army training by conducting applied research and developing advanced technology. Through these measures, AFRU produces effective and efficient training methods, training management systems, and performance evaluation techniques focused on the individual and unit needs of the total mounted force, both active and reserve.

The US Army has initiated transformation into an Objective Force designed to be responsive, deployable, agile, versatile, lethal, survivable, and sustainable for all future missions. Training of soldiers, leaders, and units is key to the success of this transformation. Initial planning and acquisition documents indicate that the primary method for implementing Objective Force training will be embedded training and electronic performance support. Most recently, I have been involved in creating a compendium of training lessons learned from the many research reports and products ARI has generated

over the past 15 years. These lessons have helped me design and develop prototype embedded training and electronic performance support to meet the needs of Objective Force soldiers equipped with future combat systems.

One of the most challenging aspects of my work is presenting the results of our research to soldiers and leaders. Since the majority of soldiers and leaders are non-psychologists, psychological constructs and principles need to be transformed into military terms to better meet their needs.

Working in a military setting is very rewarding. You get to actually see your products being implemented and you often have the opportunity to receive feedback from the soldiers, leaders, and units who have implemented them. Although becoming a research psychologist for the federal government was not something I considered in my early graduate school years, it has been a wonderful opportunity to simultaneously put my experimental psychology training into practice and learn more about the military way of life.

Teaching Diversity to an Army of One

By Jose A. Picart

The road to my current position as professor of psychology at the US Military Academy, West Point and to my research interests in diversity and leader development was shaped by my early childhood and adult experiences. I was born in San Juan, Puerto Rico and lived most of my formative years in Germany and in Fayetteville, NC. My father was a career soldier and our family moved often. As a result, I grew up with a facility for making friends and an ability to adapt to new environments. This would serve me well during my years as a cadet at West Point. It was during those four years that my interest in the study of human behavior originated. I remember telling my psychology instructor one day just how much being a cadet at West Point felt like being a rat in a Skinner box. It wasn't until after I started my graduate studies in psychology at the University of Oklahoma that I began to truly appreciate the accuracy of this description. At West Point in the early 1970s, I was shaped into a leader by a rigid system of reward and punishment. Now I help others turn that Skinner box into a sand box, a place where today's cadets can develop into leaders by more freely exploring the full range of their abilities.

Serving as a teacher and research psychologist at the US Military Academy is not much different from the work I did immediately after graduating from West Point. The recent images of war in Iraq might lead you to think that serving as a commissioned officer in the US Army would be very different from teaching at an institution of higher learning, but it isn't. For 10 years following graduation, I helped develop young men and women into leaders. Serving as a platoon leader, company commander, and staff officer, I used principles of psychology to educate, train, and inspire men and women to defend this nation. It wasn't until later, during my graduate studies in psychology, that I could fully realize and appreciate how I had employed the underlying principles of psychology as an Army officer. These early experiences greatly influenced my decision to leave a promising career in the field Army and return to my alma mater as a teacher and researcher.

My research interests have evolved from the study of similarities in how humans process information to an investigation of human differences. Early in my career I was struck by the similarities in people

across different situations and cultures – recently I have been fascinated by the differences. My journey to this point has a very personal motivation. As a black Hispanic, I was often puzzled and annoyed at being treated differently by others, even when I was convinced I was no different from my white friends. That same experience has followed me into adulthood. My previous research on similarities in human behavior now informs my effort to understand differences in human behavior and the implications of those differences on leadership and leader development.

Currently, my colleagues and I are investigating how cadets change in their openness to diversity during the four-year experience at West Point. We are particularly interested in how these changes are related to stable personality traits. Openness to diversity is an important attribute for West Point graduates who will serve in a diverse Army that is deployed around the world. What we learn will help the leadership at West Point create experiences that will reinforce and nurture the development of our students' openness toward diversity.

My work on diversity and human differences has enabled me to collaborate with practitioners and scientists in many new and interesting ways. The use of “first person” simulation technology is emerging as an exciting way to promote learning by doing. In this context, I collaborate with professionals in the video game and entertainment industry to enable cadets to experience differences in people and cultures in a simulated environment. I also collaborate with government policy makers to improve how the Army and Department of Defense educate and train soldiers for war in a global environment.

I am privileged to serve at West Point. The beauty of the Hudson Valley, the quality of the young men and women I serve, and the noble purpose we pursue inspire me to study and use psychology to improve our Army.