Culture Research Landscape Throughout the United States Department of Defense[1]

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Abstract

This contribution delineates the U.S. Department of Defense (DoD) regional expertise and culture (REC) research landscape from 2005 through 2011, including major research efforts and topics of study, key contributors and publications, collaborative practices, and future research opportunities. Through interviews and survey responses, subject matter experts (SMEs) in REC research noted the need for better REC research coordination, more social science expertise and personnel, and greater collaborative practices. Key contributors to REC research across the DoD are located at AFCLC, ARI, ARL, AFRL, CAOCL, NAWCTSD, TRADOC, and the HSCB Modeling program. Opportunities for future research include: (1) Validation studies for 3C requirements; (2) Validation studies of REC training and education programs; (3) Role of technology in culture training; (4) Mitigating Cognitive Dissonance: Crossing the Culture Divide; (5) Navigating Culture During a High Stakes Mission; (6) Team cohesion in a multinational context.

Introduction

Following the September 11, 2001 attacks on the World Trade Center and Pentagon and the 2003 U.S. invasion of Iraq, the U.S. Department of Defense (DoD[4]) realized that the U.S. military was not optimally prepared to interact with people from Middle Eastern and South Asian cultures (U.S. House of Representatives, 2008). Thus, in 2004, by mandate of law, the U.S. Secretary of Defense opened the Defense Language Office (DLO[5]). Although the DLO focused primarily on language development, DoD researchers expressed the importance of culture and regional expertise (Department of Defense, 2007a), and particularly cross-cultural competence (3C; i.e., knowledge skills, abilities, and attitudes that guide behaviors in intercultural settings; McCloskey, Behymer, Papautsky, Ross, & Abbe, 2010). In early 2011, former Under Secretary of Defense for Personnel & Readiness, Dr. Clifford L. Stanley, signed the *Department of Defense Strategic Plan for Language Skills, Regional Expertise, and Cultural Capabilities 2011–2016*. This strategic plan puts forth three goals (p. 6):

1. Identify, validate, and prioritize requirements for language skills, regional expertise, and cultural capabilities, and generate accurate demand signals in support of DoD missions.
2. Build, enhance, and sustain a Total Force with a mix of language skills, regional expertise, and cultural capabilities to meet existing and emerging needs in support of national security objectives.
3. Strengthen language skills, regional expertise, and cultural capabilities to increase interoperability and to build partner capacity.

Although there has been renewed U.S. DoD interest in research on "regional expertise and culture" (REC) in the name of national security, the critical need for language and cultural proficiency dates as far back

1 This project was supported by the Defense Language Office (DLO). A more comprehensive report was presented to the DLO and a copy of it can be obtained by contacting: Sharon Glazer, Ph.D. at sglazer1@umd.edu.
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4 A list of acronyms and definitions used throughout this report can be obtained from first author.
5 One year after this work was commissioned, the DLO changed its name to DLNSEO (Defense Language and National Security Education Office)

as World War II (Kruse et al., 2008). The current push is to incorporate such skills into operational planning so that REC capabilities are regarded as warfighting skills and core competencies of the DoD (Defense Foreign Language, 2005). Today's REC research throughout the U.S. DoD and academia worldwide is contributing to the fulfillment of these strategic goals by (a) defining culture capabilities; (b) devising measures of regional proficiency; (c) assessing needs for training, training programs, and post-training skills levels; (d) developing software technology that would educate service people on specific cultures and also reinforce the practice of normative cultural behaviors; and (e) studying personnel issues, such as multinational teams. More information on these topics is presented in the Results section of this report.

Scope of Project

Objectives and Purpose

The goal of this project was to document the landscape of U.S. DoD-funded research in the areas of REC. In 2011, this research team charted the U.S. DoD unclassified research landscape by identifying (a) groups engaged in REC research across the DoD; (b) research programs, themes, and/or topics; and (c) influential REC documents (i.e., reports, articles, and web sources). This report also provides information on collaborative activities throughout the U.S. DoD, as well as opportunities for enhancing its REC research landscape. The project was limited to U.S.-based research efforts on REC because currently there is little publicly available literature on cooperations among militaries around the globe, with the exception of NATO efforts in culture training (Soeters & Recht, 2001). Thus, attempting any comparisons of research programs from different countries is strictly limited. In this chapter, our aim is to elucidate programs that are publicly known, at least in the USA, in order to increase awareness of research needs (in the USA and probably elsewhere with militaries from around the globe deploying their forces to other countries), research collaboration opportunities with U.S. entities, and efforts that borrow from cross-cultural academic literature. Thus, we assert that although the work is dominantly U.S-centric, the applicability and relevance is probably not limited to U.S. interests.

Significance of this Report

U.S. DoD REC researchers and program managers, as well as policy makers and other stakeholders (e.g., soldiers, officers and, academic scholars) want to know (a) what research efforts have been commissioned in the USA and (b) identify U.S. groups engaging in REC research. For researchers around the globe, this report identifies operational issues that require research attention. It also helps academic scholars and contractors become more aware of the REC research efforts in the U.S. DoD and become more involved with and informed about DoD REC research efforts.

Methodology

Procedure

The research team (a) scoured relevant U.S.-based open source documents and electronic media, all of which were accessible via the Internet and (b) informally interviewed U.S.-based subject matter experts (SMEs) that are researchers, managers, and policymakers in the U.S. DoD REC arena. We then developed and administered a semi-structured interview schedule and a survey questionnaire, both of which were exempt from human subjects requirements. Still, participation in interviews and completion of surveys were voluntary and all responses were held in strict confidentiality. SMEs could engage in the discovery process as much or as little as they desired, and we requested their approval to audio-record their interviews for accurate transcription.

Semi-Structured Interview Guide and Survey. We employed two rounds of primary data collection. Round 1 was in the form of a semi-structured interview (please contact first author for a copy of the interview protocol) that lasted approximately 120 minutes. Round 2 SMEs either participated in a modified semi-structured interview that lasted an average of 80 minutes or they completed a 23-item online survey questionnaire (please contact first author for a copy of the questionnaire) that took approximately 25 to 30 minutes to complete. Data

collection efforts focused on identifying U.S.-based research investigators or groups, research topics, programs, objectives, and agendas, and funding sources.

Media Resources. Sharable print and electronic materials were also reviewed. "Print media" refers to journal articles, reports, white papers, briefs, proceedings, file drawer manuscripts, and strategic plans. "Electronic media" refers to web sites, PowerPoint presentations (e.g., conference presentations), databases, and digital tools. A list of open source media is presented in the references section of this report; additional DoD-related resources not cited in this report but identified by SMEs are listed in Appendix A.

Sample

This report is based on information obtained from interviews or surveys of 48 SMEs, as well as fact-finding efforts through open sources, referrals, and academic and conference literature. SMEs have engaged in, are beginning to engage in, or influence REC research in some way. They are not necessarily topic experts, but are linked to the U.S. DoD REC research community by conducting, commissioning, managing, or gathering information about research.

We employed both purposive and snowball sampling technique to identify and recruit SME interviewees and survey respondents who contribute to the conduct of REC research for the U.S. DoD. On our behalf, the DLO asked 17 SMEs to participate in Round 1 interviews; one of them requested to complete the survey distributed for Round 2. For Round 2, the DLO and this project team asked some SMEs to be interviewed (in order to delve deeper into the responses), others were given a choice of interview or survey, and still others were asked only to complete a survey. Seven out of nine SMEs were interviewed and 25 completed some or all of the survey. Interviewees from both rounds worked for U.S. military service branches, U.S. DoD policy organizations, or a U.S. federally funded research and development center (FFRDC), U.S. academic institutions, or U.S.-based consulting firms. Most SMEs were not researchers and at least two reported that they were newly assigned to the REC research community (without REC research or practical experience).

Educational and Professional Backgrounds. SMEs had a range of professional and educational backgrounds, as well as years of work, government sector affiliations, and REC research experience. All SMEs, but one, had at least some graduate-level education. Eleven SMEs held master's degrees only and most (n = 36) had doctoral degrees. SMEs' various educational backgrounds are shown in Table 1. Their job titles were as diverse as their disciplinary backgrounds, including branch chief, director, deputy director, associate director, program manager, deputy manager, researcher, professor, consultants, and executives.

Table 1
Discipline of SMEs' Highest Degree

Discipline of Highest Degree	Number
Anthropology	10
Industrial/Organizational Psychology, Human Factors Psychology, or International Business	7
Industrial Engineering, Engineering, Information Telecommunications/ Information Systems Management, Operations Research Systems Analysis, or Computer Science	6
Other Social Sciences, Humanities, Education (e.g., Sociology, Economics, Language/Linguistics, Cross-Cultural Rhetoric, Cultural History)	6
Experimental Psychology, Psychology, Cognitive Psychology	4
International Relations/Affairs/Studies and Strategic Intelligence Analysis	4
Political Science or Policy Analysis	4
Social or Personality Psychology	4
Geography	3

Time Involved in REC Research for the DoD. At the time of the interview (i.e., early 2011), most DoD SMEs had been working in the area of REC for a period ranging from two months to 10 years (M = 4.8 years).

REC research activities in U.S. DoD organizations are relatively new, mostly starting within the last seven years. The greatest number of contributors entered the REC arena around 2008. Two SMEs mentioned that their service began to focus on culture in 2003, around the time of Operation Iraqi Freedom (the Second Gulf War with Iraq). Many of those individuals happened to fall into culture work without prior culture training or education.

Data Analysis

Data analysis consisted of thematic coding of transcripts and notes vís à vís Atlas.ti, (a qualitative data analysis software tool), as well as descriptive summaries from questionnaires. In addition, we reviewed documents that captured information relevant to project goals, including publicly documented organizational mission statements, published summaries of state-of-the-art research activities (e.g., Pool, 2011), and conference abstracts describing current research activities.

Results

In this section we present (a) a high level summary of groups engaged in REC research across the U.S. DoD; (b) research themes and topics; (c) influential documents; and (d) collaborative practices. Opportunities for research are presented thereafter, in part, on the basis of SME input.

Table 2a

Agency/Institutional REC Research Topics and Missions - Army

Service Organization	Topics	Mission
ARI	Training; education; leader development	"The mission of the Army Research Institute [ARI] for the Behavioral and Social Sciences is to enhance individual and group performance along with group decision making and individual decision making. …ARI is the primary research institute for conducting research and analysis on personnel performance and training. The research contributes to recruiting, selection, assignment, training, mission performance, and situation awareness. …" (U.S. Army Research Institute for the Behavioral and Social Sciences).
ARL –HRED	Human performance modeling	"Scientific research and technology directed toward optimizing Soldier performance and Soldier-machine interactions to maximize battlefield effectiveness…" (U.S. Army Research Laboratory, Human Research and Engineering Directorate).
ARL – Relevant Information for Social Cultural Depiction (RISCD)	Risk taking and decision making; culture impact on adoption, design, and usage of mobile devices; culture and human-robot interaction; perspective-taking and culture stress; operational use of socio-cultural information	"Understanding and modeling cognitive aspects of socio-cultural influences on Soldier/Commander decision-making and communication to enhance performance with systems and in the mission context" (SME, personal communication, September 9, 2011).
Army Research Office (ARO)	Training; cultural consensus model; collaboration, negotiation, interaction; institutional environment	"To serve as the Army's premier extramural basic research agency in the engineering, physical, information and life sciences; developing and exploiting innovative advances to insure the Nation's technological superiority" (U.S. Army Research Laboratory).
HTS	Population dynamics and the military decision-making process	"Recruit, train, deploy, and support an embedded operationally focused socio-cultural capability; conduct operationally relevant socio-cultural research and analysis; develop and maintain a socio-cultural knowledge base, in order to enable operational decision-making, enhance operational effectiveness, and preserve and share socio-cultural institutional knowledge" (The Human Terrain System).

TRADOC Culture Center (TCC)	Cultural awareness training; developing mission requirements and partnership programs	"TRADOC develops the Army's Soldier and Civilian leaders, and designs, develops, and integrates capabilities, concepts and doctrine in order to build an Army that is a versatile mix of tailorable, adaptable, and networked organizations operating on a rotational cycle for Full Spectrum Operations; support the Army's Human Capital Core Enterprise and sustain the All-Volunteer Force" (U.S. Army Training and Doctrine Command).
AGC	Cultural mapping; cultural awareness; intelligence analysis; training	"To coordinate, integrate and synchronize geospatial information requirements and standards across the Army; develop and field geospatial-enterprise enabled systems and capabilities to the Army and the Department of Defense; and to provide direct geospatial support and products to warfighters" (U.S. Army Corps of Engineers Army Geospatial Center).
Army Engineer Research and Development Center (ERDC) – CERL	Content analysis of texts; stability operations; displaced populations	"CERL conducts research to support sustainable military installations. Research is directed toward increasing the Army's ability to more efficiently construct, operate, and maintain its installations and ensure environmental quality and safety at a reduced life-cycle cost….CERL also supports ERDC's R&D mission in civil works and military engineering" (U.S. Army Corps of Engineers Construction Engineering Research Laboratory).

Table 2b

Agency/Institutional REC Research Topics and Missions - Navy

Service Organization	Topics	Mission
CLREC	Cultural awareness; pre-deployment training; humanitarian assistance and disaster relief	"The Navy will organize, recruit, train, manage, and deliver LREC capabilities consistent with CNO's Guidance, the Navy Strategic Plan and the Navy Strategy for Our People. …we will deliver LREC: (1) with a development process that leverages legacy and emerging capabilities, but optimizes existing MPT&E infrastructure; (2) with the right capacity, competency and proficiency; (3) that is capabilities and effects-based, aligned with, and adaptable to, operational need as defined, forecast and validated by the warfighter; (4) that is managed, tracked and detailed to the right place and time to facilitate coalition, combined, Joint and Navy missions; and (5) that is continually assessed relative to operational readiness and relevance, and shaped as needed to optimize its capability/capacity" (U.S. Navy Language Skills, Regional Expertise and Cultural Awareness Strategy).
NETC	Language and culture training via game modules	"To develop the workforce through education and training that builds personal, professional and leadership skills" (Naval Education and Training Command).
NAWCTSD	Procurement of training capability or systems; decision making, teamwork, and culture	"To be the principal Navy center for research, development, test and evaluation, acquisition and product support of training systems, to provide Interservice coordination and training systems support for the Army and Air Force, and to perform such other functions and tasks as directed by higher authority" (Naval Air Warfare Center Training Systems Division).
ONR	IED and network analysis; population influence	"ONR manages the Navy's basic, applied, and advanced research to foster transition from science and technology to higher levels of research, development, test and evaluation" (Office of Naval Research).

Table 2c

Agency/Institutional REC Research Topics and Missions - Air Force

Service Organization	Topics	Mission
AFCLC	Validation of training and education programs; transfer of learning; outcome assessments; conceptual research and operational definitions; validation of 3C-related KSAs and proficiency measures; gaps in experiential learning	"Develop and maintain a cross-culturally competent Total Force across the Continuum of Learning (education, training & experience)" (U.S. Air Force Culture and Language Center).
AFOSR	Computational models; belief revision; group decision making; cultural shifts; social networks; collective violence	"AFOSR continues to expand the horizon of scientific knowledge through its leadership and management of the Air Force's basic research program. … AFOSR's mission is to support Air Force goals of control and maximum utilization of air, space, and cyberspace" (U.S. Air Force Office of Scientific Research).
AFRL	Trust; influence; deception; precautionary mechanisms (threat detection, reactions)	"AFRL's mission is leading the discovery, development and integration of affordable warfighting technologies for America's aerospace forces. It is a full-spectrum laboratory, responsible for planning and executing the Air Force' science and technology program. …The laboratory provides leading-edge warfighting capabilities keeping our air, space and cyberspace forces the world's best" (U.S. Air Force Research Laboratory).
BIA	Decision making; interpretation; influence networks; motivation; beliefs and values; behavioral analysis	"Provide responsive, authoritative, reliable support to professional military education, operational level warfighters, and policy makers to enable understanding, holistic planning, and exploitation of the perceptual and behavioral dimensions of the "human terrain" of any military or military-supported mission" (Behavioral Influences Analysis Center).

Table 2d

Agency/Institutional REC Research Topics and Missions - Marine Corps (branch of U.S. Navy)

Service Organization	Topics	Mission
CAOCL	Pre-deployment training; regional culture and language familiarization; ensure LREC knowledge is included in operational planning; curricula development; maintenance of the training and readiness manual related to culture	"…CAOCL ensures Marines are equipped with operationally relevant regional, culture, and language knowledge to allow them to plan and operate successfully in the joint and combined expeditionary environment: (1) in any region of the world; (2) in current and potential operating conditions; and (3) targeting persistent and emerging threats and opportunities" (USMC Center for Advanced Operational Culture Learning).
MCCDC	Soldiers' skill sets (including cultural knowledge)	"Develop fully integrated Marine Corps warfighting capabilities; including doctrine, organization, training and education, materiel, leadership, personnel, and facilities, to enable the Marine Corps to field combat-ready forces" (Marine Corps Combat Development Command).

Table 2e

Agency/Institutional REC Research Topics and Missions - Department of Defense (DoD)

Service Organization	Topics	Mission
Defense Advanced Research Projects Agency (DARPA)		"To prevent strategic surprise from negatively impacting U.S. national security and create strategic surprise for U.S. adversaries by maintaining the technological superiority of the U.S. military" (DARPA).
Defense Intelligence Agency (DIA)	Cultural priming	"To prevent strategic surprise and deliver a decision advantage to warfighters, defense planners, and policymakers" (DIA).
HSCB	Data collection and management; multi-scale and hybrid modeling of regional stability; analysis and modeling of non-kinetic courses of action; training methodologies	"The Office of Naval Research (ONR) Human Social, Culture and Behavior Modeling Program invests in research on building capability through the development of a knowledge base, building models, and creating training capacity in order to understand, predict, and shape human behavior cross-culturally" (ONR, HSCB Thrust)
Intelligence Advance Research Projects Activity (IARPA)	Cultural Emics	"Invests in high-risk/high-payoff research programs that have the potential to provide our nation with an overwhelming intelligence advantage over future adversaries" (IARPA).
Institute for Defense Analyses (IDA)		"To provide objective analyses of national security issues, particularly those requiring scientific and technical expertise, and conduct related research on other national challenges" (IDA).

Table 2f

Agency/Institutional REC Research Topics and Missions - Private Contractors

Service Organization	Topics	Mission
CASL	Regional proficiency; 3C; cultural priming; culture and leadership; socio-cultural linguistics	"CASL's overarching mission is to defend and protect our country by improving our language readiness and capabilities…" (University of Maryland Center for Advanced Study of Language).
Personnel Decisions Research Institutes (PDRI)	Regional proficiency competencies and minimum qualifications	"To design, develop and implement human capital and training solutions that incorporate recent advances in the behavioral sciences and adhere to the highest principles of professional practice" (PDRI).
CPG	Defining 3C constructs; determining foundational competency levels of 3C	"We provide our customers with design, development, deployment, and assessment of organizational and training solutions. Our overall purpose is to find the best ways to train and assess cognitive performance" (Cognitive Performance Group).
361 Interactive	General 3C assessment and training of general cognitive skills; model of 3C and its constituent knowledge	"With a special focus on integrating technology with learning, 361 Interactive seeks to create innovative educational and training solutions" (361 Interactive).
ARA	3C model for the military domain; 3C relationship to mission-relevant performance; cultural sense-making; training requirements	"To solve problems of national importance by providing science and engineering research, technical support services, specialty products, and integrated solutions" (Applied Research Associates).
Global Cognition	Conducts research and develops training/ assessment applications in the areas of cultural cognition, metacognition, cross-cultural competence, and cognitive skills and expertise	"Helps individuals and organizations understand and interact with the diverse people and ideas they encounter across the world" (Global Cognition).
Monitor 360	Cultural analysis methods; cultural research and analysis for various geographies	"Monitor 360 helps organizations make sense of complex, cross-disciplinary global strategic and analytical challenges" (Monitor 360).
RAND	Cross-cultural skills training; KSA analysis for soldiers	"The RAND Corporation is a nonprofit institution that helps improve policy and decision making through research and analysis" (RAND Corporation).
Humintell	Emotion; nonverbal behavior; facial expressions; culture; micro-expressions; cross-cultural adaptation	"To be the worldwide leader in research, consulting and training in the areas of emotion, nonverbal behavior, facial expressions and culture to government and industry" (Humintell).

Table 3a

Foundational DoD Literature on Regional Expertise and Culture

Year	Title	Authors
2005	*Defense Language Transformation Roadmap*	Defense Foreign Language Steering Committee (DFLSC)
2007	*DoD Regional and Cultural Capabilities: The Way Ahead*	Department of Defense
	Regional and Cultural Expertise: Building a DoD Framework to Meet National Defense Challenges	
	DoD Instruction Number 5160.70 Subject: *Management of DoD Language and Regional Proficiency Capabilities*	Department of Defense
2008	*Building Language Skills and Cultural Competencies in the Military: DoD's Challenge in Today's Educational Environment*	John E. Kruse, Suzanne McKenna, Noah B. Bleicher, Thomas E. Hawley, Andrew Hyde, and Sasha Rogers, & Lorry M. Fenner
2010	*Strategic Roadmap for Human Social, Cultural, and Behavioral Science and Technology*	Jean MacMillan, Jared Freeman, Greg L. Zacharias, Bruce Bullock, & Jonathan Pfautz
2011	*Socio-cultural Data to Accomplish Department of Defense Missions: Toward a Unified Social Framework*	Robert Pool
	Strategic Plan for Language Skills, Regional Expertise, and Cultural Capabilities 2011–2016	Department of Defense

Table 3b

Supporting DoD Literature on Regional Expertise and Culture

Year	Title	Authors
2006	*The Army's New TRADOC Culture Center*	Maj. Remi Hajjar
	Counterinsurgency Warfare (COIN) (Field Manual No. 3-24)	Headquarters, Department of the Army; Forward by Gen. David H. Petreaus & Gen. James H. Mattis
2007	*On the Uses of Cultural Knowledge*	Sheila Miyoshi Jager
2008	*Stability Operations* (Field Manual No. 3-07)	Headquarters, Department of the Army
	U.S. Naval Language Skills, Regional Expertise and Cultural Awareness Strategy	Chief of Naval Operations
	Statement by BG Richard C. Longo, Director of Training, U.S. Army, Office of the Deputy Chief of Staff, and the U.S. Army Senior Language Authority Before the House Armed Services Committee Oversight and Investigations Subcommittee Second Session, 110th Congress	Army
	The U.S. Army Study of the Human Dimension in the Future: 2015–2024	Army TRADOC
	Marine Corps Vision & Strategy 2025	Marine Corps
	Operational Culture for the Warfighter: Principles and Applications	Barak A. Salmoni & Paula Holmes-Eber
	Toward an operational definition of Cross-Cultural Competence from interview data (DEOMI Internal Report CCC-08-1)	Karol G. Ross
2009	*Understanding Human Dynamics*	Defense Science Board Task Force
	Army Culture and Foreign Language Strategy	Headquarters, Department of the Army
	Air Force Culture, Region & Language Flight Plan	U.S. Air Force
	Joint Publication 3-24, Counterinsurgency Operations	Joint Chiefs of Staff

	Joint Professional Military Education (JPME) Special Areas of Emphasis (SAE)	Chairman of the Joint Chiefs of Staff
	Cross-cultural skills for deployed Air Force personnel: Defining cross-cultural performance (Air Force Research Number: MG-811-AF)	C. H. Hardison, C. S. Sims, F. Ali, A. Villamizar, B. F. Mundell, & P. Howe
	Identifying the core content and structure of a schema for cultural understanding (Technical Report 1251; Army Project Number 622785A790)	J. Rentsch, I. Mot, & A. Abbe
2010	*Technical Report 1278 A Developmental Model of Cross-Cultural Competence at the Tactical Level*	Michael J. McCloskey, Kyle J. Behymer, Elizabeth Lerner Papautsky, Karol G. Ross, & Allison Abbe
2011	*Interagency Language Roundtable Skill Level Descriptors for Competence in Intercultural Communication [DRAFT]*	Interagency Language Roundtable
	Developmental Levels for Language, Region and Culture Learning in the U.S. Air Force	U.S. Air Force Backgrounder

Programmatic Contributors and Research Themes

Most of the REC programs throughout the military services of the U.S. DoD began after the USA engaged in war against Iraq in 2003. The U.S. Army, Marine Corps, Air Force, and Navy's Culture Centers of Excellence were established to help prepare soldiers for intercultural experiences via training activities that would teach them how to interact, engage with, and understand locals in countries where they are stationed (see report by McFate, 2007 for more details on these centers' missions). However, according to one interviewee, despite the existence of these culture centers and some limited culture-related research, REC research did not have solid financial support until a real socio-cultural research investment was made at ONR in April 2008. . The U.S. Office of the Secretary of Defense (OSD) HSCB program, executed by the ONR, was initiated in 2008 after Dr. R.E. Foster and Capt. Sean Biggerstaff promoted its development through their 2006 report, which identified gaps across the DoD. At this time, culture also became incorporated into the strategic technology objectives of the U.S. Naval Air Systems Command (Naval Aviation Enterprise, 2006), which encouraged human performance science and technology research, with a focus on culture.

Table 2 lists research topics and U.S. organization's missions, organized by agency. This representation illustrates how service-specific missions galvanized research topics and REC research efforts in different ways across these four U.S. military components.

Table 3 presents foundational DoD reports on REC programs that shaped interest and narrowed foci for the U.S. DoD's REC vision of the 21st century. Most of these documents are laid out in a structure of goals and proposed actions. Additional supporting materials on REC activities in the DoD are also presented in Table 3.

Table 4

A Working Clearinghouse of DoD-Relevant Research Efforts: Themes, Topics, and Organizations

THEMES AND TOPICS	ORGANIZATION
Training and Education	TRADOC;CLREC
Culture training	DLI
Curricula development	AFCLC
Curricula comparison	eCrossCulture Corp.
Distributed learning	AFCLC
Immersive learning	CASL; STTC
Knowledge generation and skill-building	NDU
Social task analysis	Lockheed Martin
Validation of training/education programs & tools	AFCLC; ARI
Software Development	CLREC
Game-based learning	Kinection; Pacific Northwest Natl. Lab; STTC; TRAC; USC
Language processing	Aptima
Simulation	Los Alamos Natl. Lab; MacKerrow; STTC
Software usability/Organizational anthropology	Sandia Natl. Labs
Text mining and analysis	CMU; ERDC-CERL; MITRE; Pacific Northwest Natl. Lab
Virtual world	Charles River Analytics; STTC
Cross-Cultural Competence (3C)	
3C & diversity training	361 Interactive; CASL; FIT
3C learning recommendations	AFCLC; NAWCTSD; PDRI
Conceptual and operational definitions	AFCLC
Cross-cultural adaptation/Cultural adaptability	AFRL; SFSU
Cultural effectiveness	ARA; Global Cognition
Defining 3C performance measures	AFCLC; ARI
Developing markers for competencies	AFCLC; ARI; NAWCTSD; PDRI
Developmental model of 3C	361 Interactive; ARI; CPG; DEOMI
Socio-Cultural Knowledge	
Cultural intelligence	Oak Ridge Natl. Lab
Culture and mental models	CPG
Cultural sense-making	Global Cognition; UMich
Cultural values	CASL
Decision-making	AFRL; CASL; Global Cognition; ONR; Milcord; UMD
Emotion, nonverbal behavior, facial expressions	SFSU
Ethnography	HTS; UCF
Mental models	CPG; NPS
Narratives	ASU
Socio-cultural dynamics of human behavior	HTS
Socio-cultural knowledge for counterinsurgency	HTS; IDA
Socio-cultural perspectives and intelligence analysis	MITRE
Social network analysis	ARO; Global Cognition; MITRE; Sandia Nat'l Labs; Uof I; USC; VTech

Personnel and Validation Studies	
Leadership	SJSU-GLAC
Needs assessment, development, implementation, evaluation	AFRL; AFCLC
Personnel selection	ARI
Regional proficiency assessment	CASL;NAWCTSD; PDRI
Stability operations	ERDC-CERL; ODU
Teamwork	AFRL; NAWCTSD; Pacific Science & Engineering Group; UCF
Forecasting and Computational Modeling	AFOSR; Global Cognition; HSCB1
Adversarial organizational structure dynamics	Lockheed Martin
Collaboration in teams and negotiations	UMD
Cultural consensus modeling	UCI; U of I; UMD;
Decision-making	Knowledge Based Systems; Milcord
Intercultural knowledge, skills, and abilities	Alelo
Perspective-taking/sense-making	CASL; Global Cognition; UMich
Social dynamics	Knowledge Based Systems
Social radar	CASL
Verification and validation	Aptima; Evidence Based Research; GMU; Lockheed Martin; Los Alamos Natl. Lab; MITRE; NPS; Soar Tech; TRAC

Note: Table may not be complete and fully representative of all people working on themes and topics presented.

On the basis of these U.S. DoD documents, it is apparent that the major thrust for REC research is in a nascent stage, beginning development around 2006. This is further evident in the small number of REC researchers in the DoD. For this reason, much of the "research … is [being] farmed out to … research houses and to contracting companies. [But,] frequently the people who are doing it are so disconnected, both from the operating context and the context of institutionalization, that their results[, although they] may be very good, … end… up in a binder on the shelf because people can't use it, either because it doesn't take one of those contexts or both into account." Despite these personnel challenges, various DoD agencies include "culture" and/or "region" in their mission statements.

Culture Research Themes in the U.S. Services. When interviewees discussed topics of culture research, most of them mentioned 3C, which includes mental schemas and traits that enable or prevent individual mastery of 3C; curricula development; and identifying knowledge, skills, abilities, and attitudes (KSAAs) relevant to culture learning. In addition, a few agencies indicated some dabbling in computational forecasting, models, and simulations of foreign cultures, as well as human terrain systems (in which social scientists are deployed with military units and provide military personnel with an understanding of the cultural context to help with intercultural interactions and decision-making; Pool, 2011) as "operations research."

Research Themes and Topics. Table 4 organizes research topics along six themes. These themes are (a) training and education, (b) software development, (c) cross-cultural competence, (d) socio-cultural knowledge, (e) personnel and validation studies, and (f) forecasting and computational modeling. A review of the table's contents suggests that U.S. DoD research, as well as basic research conducted in academia, are supporting the DoD's 2011-2016 strategic plan (Department of Defense, 2011) by (a) identifying requirements for REC learning outcomes, (b) developing and testing high-tech software, and (c) assessing individual and team factors among personnel.

As a point of comparison to culture-related research topics addressed in the U.S. DoD, we searched for if other countries have defense-funded culture-related research, but we were not able to find much in this area with exception of programs addressing 3C and socio-cultural knowledge training. In the German military's

Center for Internal Leadership, military personnel are learning their own culture in an effort then to better understand others' cultures (Birkenstock, 2012). German military students are also sent to the USA to immerse themselves in American culture (Pastorek, n.d.). In Afghanistan, military leadership is sharing with their own soldiers pamphlets that address socio-cultural practices they might observe or experience with U.S. soldiers (Ferris-Rotman, 2012). In a NATO study, Febbraro, McKee, and Riedel (2008) encouraged more cultural sensitivity training efforts. In an effort to address cross-cultural training needs, the Norwegian Defense Media Center developed and evaluated self-report learning through a virtual training module. The researchers found that cadets felt they learned from this type of training program Prasolova-Førland, Fominykh, Darisiro, and Mørch (2013). Van Hemert, de Koning, and van den Berg (n.d.), from the TNO Defence, Security and Safety Division in the Netherlands wrote theoretical piece on cross-cultural interactions between UK and Afghans based on qualitative interviews with UK military practitioners. Ooink (2008) also conducted a study to evaluate the effectiveness of Dutch military cultural training programs. Soldiers who took part in the training and then deployed to Afghanistan returned home with decreased attitudes toward Afghans indicating that in terms of shifting attitudes, the cultural training program at that time was not successful and Ooink recommended approaches to improve the training.

Collaboration Activities

Means of Collaboration. SMEs discussed engaging in informal and formal collaboration. In general, informal outlets allow individuals to gather and disseminate information relevant to their research efforts and to form collegial relationships that can facilitate research cooperation and activities. Table 5 lists examples of collaboration activities facilitated through conferences, workshops, working groups, interest groups, and online tools.

Formal collaborative tools mentioned by interviewees include action panels (Research, Development, Test, and Evaluation—RDT&E) and funding mechanisms (contact first author to learn which REC research agencies fund external studies), such as Broad Agency Announcements (see Table 6 for example REC-related DoD agncy research collaborations). For example, funding supports interdisciplinary teams address questions that transcend traditional academic boundaries.

Collaborations with Academe. Although a small handful of REC experts in academia are collaborating with military to inform REC research, SMEs were concerned about a divide between the DoD and academia. Those from academia remarked that expert theoretical knowledge is not utilized sufficiently. In fact, DoD SMEs recommended other DoD employees as experts in culture, while naming only three academic researchers. Moreover, the academic researchers known to the DoD are often the same small number of individuals, which restricts lines of knowledge sharing. Because of security issues, however, academic contractors often are prohibited from contributing to the DoD REC mission. DoD researchers also indicated that they had insufficient time to keep up-to-date on the sizable body of external academic literature that may be relevant to their work. Further exasperating this situation is the fact that DoD researchers have limited access to academic journals due to government procurement constraints. The end result is that DoD researchers may not be as informed as they would like on the most current theories and methodologies related to their work because they are largely disseminated through external academic publications. A a result, there is also redundancy in efforts U.S. DoD REC research efforts.

Table 5
Examples of Informal Collaboration

Activity	Output/Deliverable
	HSCB Modeling
Conferences	TRADOC Culture Summit
	Academic Associations/Annual Meetings Social Computing and Cultural Modeling
	Air Force Office of Scientific Research
Workshops	National Research Council of the National Academies
	NATO
	HSCB Cross-Cultural Competence Project
Working Groups	Interagency Language Roundtable (ILR) Working Group Meetings
Interest Groups	MORS Social Science Community of Practice Symposiums
	Military Anth List Serve
	Irregular Warfare Modeling and Simulation (IWM&S) Group Wiki
Online Tools	HSCB Newsletter
	Strategic Coordination Group (SCG)
	Culture Catches Topical E-mail Briefs

Table 6
Examples of Formal Collaboration

Outreach-Based	
Broad Agency Announcements (BAAs) Issued by	HSCB (jointly issued by ONR and OSD) IARPA DARPA
Program-Based	
Assistant Secretary of the Army for Acquisition, Logistics, and Technology (ASAALT)	Composed of ARL-HRED, U.S. Army Corps of Engineers's Engineer Research and Development Center (ERDC), and ARI; sponsors socio-cultural and language research ranging from 6.1 – 6.3, also funds AGC. Mission: To provide soldiers with a decisive advantage in any mission by developing, acquiring, fielding, and sustaining the world's best equipment and services and leveraging technologies and capabilities to meet current and future Army needs.
Minerva Initiative	The Minerva Initiative is a DoD-sponsored, university-based social science research initiative launched by the Secretary of Defense in 2008, focusing on areas of strategic importance to U.S. national security policy. Goal: To improve the DoD's basic understanding of the social, cultural, behavioral, and political forces that shape regions of the world of strategic importance to the U.S. Collaborators: universities, DoD research institutes, individual scholars, interdisciplinary and cross-institutional projects.
DoD Multidisciplinary University Research Initiatives (MURI)	The MURI program supports research by teams of investigators that intersect more than one traditional science and engineering to accelerate both research progress and transition of research results to application. Most MURI efforts involve researchers from multiple academic institutions and departments. For example, Project Interaction: Intercultural Assessment of Collaboration in Teams and in Ongoing Negotiations (PI: Dr. Michele Gelfand, University of Maryland) sponsored by ARO and brings together eight U.S. universities.
DoD Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR)	These programs provide funding for early-stage R&D projects at small technology companies for projects that serve a DoD need and have commercial applications. The SBIR Program provides up to $1,150,000 in funding directly to small technology companies (or individual entrepreneurs who form a company). The STTR Program provides up to $850,000 in funding directly to small companies working cooperatively with researchers at universities and other research institutions.
Online Tool	
DEOMI	www.defenseculture.org

Future Research Direction

Listed below are several topics for future research. These suggestions are based on an analysis of SME input, as well as analysis of state-of-the-art academic research and gaps between basic academic and DoD applied research. Although these topics are based on U.S.-based efforts or needs, they are a clear call for researchers anywhere in the world to address.

Opportunity 1: Validation Studies for 3C Requirements

The DoD is saturated with literature reviews on 3C. A common conclusion is that research is needed to validate the 3C framework (MacMillan, Freeman, Zacharias, Bullock, & Pfautz, 2010). Note that there are a few validation studies completed (e.g., Hardison, et al., 2009; Matsumoto, LeRoux, & Schaab, in review; Rentsch, Mot, & Abbe, 2009; Ross, 2008; Warren & Sutton, 2005) or in progress (e.g., ARI), but they are not clearly linking 3C with performance. However, we propose that before validating components of the 3C framework, it is important to evaluate its links to performance and to assess the return on investment. This type of effort is not only needed within U.S. DoD, but it is clearly missing from academic literature too.

Performance indicators must be determined in relation to job and rank. Related questions one might ask are: At what point in one's career and in what jobs would relating 3C to performance be important? Which types and levels of DoD personnel need 3C training? For example, if 100% of the General Purpose Forces (GPF) go through 3C, should we expect that for XX% of them levels of 3C will not actually be relevantly linked to performance, but for XX% it would be? Second, cross-cultural factors need to be mapped on to relevant job performance standards. 3C is expected to relate to job performance criteria that require 3C-related knowledge, skills, abilities, attitudes, and individual differences (personality). Only after these links are established should researchers engage in a series of validation studies to ensure construct validity, discriminant validity, and finally concurrent and predictive validity. On the basis of the above studies' results, training and education curricula can be developed

Opportunity 2: Validation Studies for Training and Education Programs

Once performance criteria and 3C components are validated, it would be possible to reliably assess the relationship between culture training and mission effectiveness. Particular attention must be paid to validation of training and performance measures to assess the return on investment of current and future programs. Unfortunately, there is limited information regarding the usefulness and importance of REC training and education in U.S. DoD or scholarly academic literature .

Opportunity 3: Role of Technology in Culture Training

According to SMEs, more basic research is needed on use of technology for culture training. Although Humintell, Inc. has completed an unpublished validation study of GlobeSmart Commander web-based culture training tool for the Army (personal communication, November 9, 2011), there is no research on which mode of REC training and learning would yield maximum benefits for service members of various backgrounds. For example, it would be useful to investigate whether an interactive simulation game on a hand-held device is equally effective for a 20-year-old and a 38-year-old. Future research could also examine whether bringing together soldiers stationed all over the world into a virtual platform and representing them by avatars would yield comparable learning results as face-to-face training. Determining individual difference variables that best predict the likelihood of a soldier's success in learning through avatars versus self-paced, self-guided online training programs also would be fruitful research.

Opportunity 4: Mitigating Cognitive Dissonance: Crossing the Culture Divide

We observed that an area prime for research relates to cognitive dissonance, an affective state of discomfort caused by conflicting perspectives or conflicting cognition in relation to a situation (Bem, 1967). In such situations, a person typically will change his or her cognition to match his or her behavior. Cognitive dissonance might occur in soldiers who are trained for combat but then are required to engage in peacemaking efforts. Researchers need to think about how culture training can be implemented so as to minimize psycholog-

ical distress to the soldier, who must toggle between thoughts of *enemy* and *ally*. One SME said that U.S. soldiers are engaged in a "gigantic cultural change war, not just cultural, but mentally and physically cultural war." The challenge is not only in understanding cultures, but also how to manage psychological challenges of irregular warfare and physical challenges of not being present at the site of engagement (due to use of unmanned robotics). Such research could also be done with international assignees.

Opportunity 5: Navigating Culture During a High Stakes Mission

Based on a study by Hardison and colleagues (2009) of RAND Corporation, it was apparent from a survey study of over 6,000 Air Force members that "managing stress in an unfamiliar cultural setting" (p. 20) is one of nine important cross-cultural enablers for coping with airmen's "day-to-day activities and are likely to be needed in a variety of [Air Force] jobs" (p. 7). Indeed, if one takes a moment to consider why 3C is necessary, it comes down to the need to feel comfortable in ambiguous situations. Cognitive, affective, and behavioral preparation to interact with people of different cultural backgrounds are resources to deal with the uncertainties of different situations. According to the Conservation of Resources Theory, "people must invest resources in order to protect against resource loss, recover from losses, and gain resources" (Hobfoll, 2001, p. 349). To exemplify this idea in terms of 3C, in order to cope with the stressors of unfamiliar situations, it is prudent that the military train all the GPF to some level of 3C, as the strategies for engaging in unfamiliar situations is a type of coping resource that would help mitigate possible psychological (e.g., anxiety), physiological (e.g., hyperventilation), and behavioral (e.g., unnecessary beating of another person) responses.

Other studies that have recognized the importance of understanding the links between stress and performance have come from the Navy's studies on tactical decision-making under stress (e.g., Flin, Salas, Strub, & Martin, 1997) and from the Walter Reed Army Institute for Research studies on stress during peacekeeping (e.g., Castro, 2003). In 2011, at the TRADOC Culture V Summit, Salas spoke about the stress related to decision-making in multicultural and intercultural teams. Although there is a strong history of stress research and a recent history of acculturative stress research, work-related stress research across cultures or in multicultural teams is much more limited (Glazer, 2008). Yet, one of the goals for 3C training for any nation's troops on overseas deployments is to provide military personnel with the tools to cope with ambiguous situations, conflicts, and feelings of uncertainty and to mitigate potential negative consequences.

One way stress researchers have studied whether a coping strategy was learned is to engage in pre- and post-testing of research participants' responses to stressful situations. If the coping response was learned, then responses to stressors would not be as negative (and possibly not negative at all) at post-test versus pre-test. Thus, an area ripe for research is the mitigation of undesirable affective, behavioral, and cognitive responses to difficult intercultural situations.

Opportunity 6: Team Cohesion in a Multnational Context

Finally, given the increasing utilization of military teams comprised of multination coalitions, team cohesion is another area in need of empirical study. In particular, SMEs we interviewed stressed the importance of team research as it relates to 3C training, noting that there are several directions the research could go. Literature on multinational transitional teams, long-term teams, and problem-focused short-term teams will likely require different 3C training foci. Furthermore, multinational teams differ in performance outcomes based on the composition (who is on the team) in terms of status, nationality, gender, experience, objectives, leadership, and other factors. Both individual and team training would benefit multinational campaigns. Without taking these attributes and training targets into consideration, multinational teams are apt to be less productive. Topics currently under investigation include assessment of 3C transfer of knowledge, skills, and abilities, and how to translate them from individual competencies into unit effectiveness.

Project Limitations

A major limitation in this project was not being able to access some key DoD personnel and materials. This created a challenge in investigating the REC research domain within the U.S. DoD. Some DoD personnel were not accessible because of their workload or perception of the project's relevance, or simply because they

were not readily identifiable. In addition, materials were often difficult to access due to various factors associated with this project team being external to the DoD, or because the team was not aware of materials that could not be identified or found easily through Internet searches. Finally, this report is a static representation of the state of the REC research community that is affiliated mostly with the military services.

Conclusion

The primary purpose of this report was to document and characterize various aspects of the U.S. DoD REC research landscape, including its key contributors. Results from interviews and surveys indicate that the DoD REC research programs are steadily addressing the *2011-2016 DoD Strategic Plan* (Department of Defense, 2011). DoD agencies, the Services, and contractors are working on (a) identifying and validating measures of socio-cultural factors that influence personnel performance, (b) building and implementing training programs and tools on regions and cultures in general, and (c) strengthening collaborative efforts and knowledge sharing through online tools, professional events, and funding opportunities. Specifically, thematic research topics addressed are: training & education, software development, cross-cultural competence, socio-cultural knowledge, personnel & validation studies, and forecasting & computational modeling. DoD REC research is not only building upon basic research found in the social sciences, but in some cases it is also paving the path as evident in a 2011 call for papers on cross-cultural competence in the *Journal of Cross-Cultural Psychology*. Research is occurring through formal and informal collaborations, getting presented at national and international conferences, and lead by scientists in disciplines ranging from psychology, anthropology, and sociology to computer science and engineering. Still, more work is needed to (a) create transparency in research, possibly through an online research portal (R-Space), that would be accessible worldwide, (b) solidify cross-agency and organization (e.g., with academia) collaborations, including international defense ministry to defense ministry collaborations, and (c) increase DoD research funding to study important issues that are steeped in cultural understanding in order equip policy-makers, foreign diplomats and attachés, and military personnel with enhanced knowledge, skills, and abilities to be effective envoys abroad.

References

361 Interactive (n.d.). Retrieved August 17, 2011, from http://www.361interactive.com/

Air Force Culture and Language Center (2011). Retrieved August 17, 2011, from http://www.culture.af.edu/center.html

Air Force Office of Scientific Research (n.d.). Retrieved August 17, 2011, from http://www.wpafb.af.mil/library/factsheets/factsheet.asp?id=9492

Air Force Research Laboratory (n.d.). Retrieved August 17, 2011, from http://www.af.mil/information/factsheets/factsheet.asp?id=148

Air University (2009). *Air University Quality Enhancement Plan 2009-2014: Cross-culturally competent airmen*. Retrieved November 15, 2010, from http://www.culture.af.edu/PDF /AUQEP2009.pdf

Alrich, A. (2008, December). *Framing the cultural training landscape: Phase I findings* (IDA Document D-3709). Retrieved November 15, 2010, from http://www.dtic.mil/cgi-bin/GetTRDoc?AD=ADA493558

Applied Research Associates (2011). Retrieved August 17, 2011, from http://www.ara.com/

Behavioral Influences Analysis Center (n.d.). Retrieved August 17, 2011, from http://www.au.af.mil/bia/about.htm

Bem, D. J. (1967). Self-perception: An alternative interpretation of cognitive dissonance phenomena. *Psychological Review, 74* 183-200.

Birkenstock, G. (2012, Sept. 17). *German soldiers learn cultural cues*. Retrieved December 10, 2013 from http://www.dw.de/german-soldiers-learn-cultural-cues/a-16245222-1

Castro, C. A. (2003). Consideration when conducting psychological research during peacekeeping missions: The scientist and the commander. In T. W. Britt & A. B. Adler (Eds.), *The psychology of the peacekeeper: Lessons from the field*. Westport, CT: Praeger.

Chairman of the Joint Chiefs of Staff (2009, April). *Joint Professional Military Education (JPME) Special Areas of Emphasis (SAE).* Valid as of November 9, 2011: http://www.dtic.mil/doctrine/education/sae_2009.pdf

Chief of Naval Operations (2008, January). *U.S. Naval Language Skills, Regional Expertise and Cultural Awareness*

Strategy. Valid as of November 9, 2011: http://www.navy.mil/maritime/Signed_Navy_LREC%20Strategy.pdf

Cognitive Performance Group (2011). Retrieved August 17, 2011, from http://cognitiveperformancegroup.com/about/aboutcpg

Defense Advanced Research Projects Agency (n.d.). Retrieved September 9, 2011, from http://www.darpa.mil/our_work/

Defense Foreign Language Steering Committee (2005, January). *Defense language transformation roadmap.* Retrieved May 2011, from http://www.defense.gov/news/Mar2005/ d20050330roadmap.pdf

Defense Intelligence Agency (2011). Retrieved September 9, 2011, from http://www.dia.mil/

Defense Language Office and Defense Equal Opportunity Management Institute (2011, September). *3C: Cross cultural competence. Building competencies for our 21st century total force*. Retrieved October 18, 2011, from http://www.defenseculture.org/

Defense Science Board Task Force on Understanding Human Dynamics (2009, March). *Report of the Defense Science Task Force on understanding human dynamics.* As of November 9, 2011: http://www.acq.osd.mil/dsb/reports/ADA495025.pdf

DEOMI Resource Network (n.d.). Retrieved August 29, 2011, from http://www.deomi.org /DRN/index.cfm

Department of Defense (2007a, October). *DoD regional and cultural capabilities: The way ahead* (OMB No. 0704-0188). Retrieved May 2011, from http://dodreports.com/pdf/ada488851.pdf

Department of Defense (2007b, June). *DoD Instruction Number 5160.70* Subject: *Management of DoD Language and Regional Proficiency Capabilities.* Valid as of: http://www.dtic.mil/whs/directives/corres/pdf/516070p.pdf

Department of Defense (2011, February). *Strategic plan for language skills, regional expertise, and cultural capabilities: 2011-2016*. Retrieved October 18, 2011, from http://prhome.defense.gov/READINESS/DLO/files/STRAT%20PLAN.pdf

Febbraro, A. R., McKee, B., & Riedel, S. L. (2008, Nov.). *Multinational military operations and intercultural factors.* North Atlantic Treaty Organization (NATO). Technical Report HFM-120. Retrieved December 10, 2013 from http://ftp.rta.nato.int/public//PubFullText/RTO/TR/RTO-TR-HFM-120///$$TR-HFM-120-ALL.pdf

Ferris-Rotman, 2012

Flin, R., Salas, E., Stub, M., & Martin, L. (Eds.) (1997). *Decision-making under stress: Emerging themes and applications.* Hampshire, England: Ashgate.

Foster, R. E., & Biggerstaff, S. (2006, August). *Report on human, social, and cultural behavior (HSCB) modeling in response to strategic planning guidance (Fiscal Years 2008-2013).*

Friedland, L., Shaeff, G. W., & Turnley, J. G. (2007). *Socio-cultural perspectives: A new intelligence paradigm. Report on the conference at The MITRE Corporation, McLean, Virginia, September 12, 2006* (MITRE Technical Report MTR70244). Retrieved July 5, 2011, from http://www.mitre.org/work/tech_papers/tech_papers_08/07_1220/07_1220.pdf

Glazer, S. (2008). Cross-cultural issues in stress and burnout. In J. R. B. Halbesleben (Ed.), *Handbook of Stress and Burnout in Health Care* (pp. 79-93). Huntington, NY: Nova Science Publishers.

Guide to FY2012 Basic Research Funding at the Department of Defense (DoD) (2011). Retrieved from University of Southern California, Valid as of November 9, 2011: http://research.usc.edu/files/2011/05/Guide_to_FY2012_DOD_Basic_Research_Funding_Mar_25_11.pdf

Hajjar, R. (2006). The Army's new TRADOC culture center. *Military Review, Nov.-Dec., 89-92.*

Hardison, C. H., Sims, C. S., Ali, F., Villamizar, A., Mundell, B. F., & Howe, P. (2009). C*ross-cultural skills for deployed Air Force personnel: Defining cross-cultural performance.* (Air Force Research Number: MG-811-AF). Santa Monica, CA: RAND Corporation. As of November 2, 2011: http://www.rand.org/pubs/monographs/MG811.

Headquarters, Department of the Army. (2006, June 16). *Counterinsurgency (Final Draft – Not for Implementation)* (Publication Field Manual No. 3-24). Valid as of November 9, 2011: http://www.fas.org/irp/doddir/army/fm3-24fd.pdf

Headquarters, Department of the Army. (2008, October 6). *Stability Operations* (Publication Field Manual No. 3-07). Valid as of November 9, 2011: http://www.fas.org/irp/doddir/army/fm3-07.pdf

Headquarters, Department of the Army. (2009, December). *Army Culture and Foreign Language Strategy.* Valid as of March 23, 2011: https://atn.army.mil/dsp_template.aspx?dpID=2

Hobfoll, S. E. (2001). The influence of culture, community, and the nested-self in the stress process: Advancing conservation of resources theory. *Applied Psychology: An International Review*, *50*(3), 337-421.

Holmes-Eber, P., Scanlon, P. M., & Hamlen, A. L. (2009). *Applications in operational culture: Perspectives from the field*. Quantico, VA: Marine Corps University Press.

Humintell (2011). Retrieved August 17, 2011, from http://www.humintell.com/about-us/

Huntington, S. P. (1957). *The soldier and the state: The theory and politics of civil-military relations.* Cambridge, MA: Harvard University Press.

Institute for Defense Analyses (2009). Retrieved September 9, 2011, from https://www.ida.org/aboutus/historyandmission.php

Intelligence Advanced Research Projects Activity (n.d.). Retrieved September 9, 2011, from http://www.iarpa.gov/

Interagency Language Roundtable (2011). *Interagency Language Roundtable Skill Level Descriptors for Competence in Intercultural Communication [DRAFT].* Valid as of November 9, 2011: http://www.govtilr.org/Skills/Intercultural_PostingDraft.pdf

Joint Chiefs of Staff (2009, October). *Joint Publication 3-24 Counterinsurgency Operations.* Valid as of November 9, 2011: http://www.dtic.mil/doctrine/new_pubs/jp3_24.pdf

Kruse, J. E., McKenna, S., Bleicher, N. B., Hawley, T. E., Hyde, A., Rogers, S., & Fenner, L. M. (2008, November). *Building language skills and cultural competencies in the military: DOD's challenge in today's educational environment*. Report for the U.S. House of Representatives Committee on Armed Services, Subcommittee on Oversight & Investigations. Retrieved May 2011, from http://prhome.defense.gov/READINESS/ DLO/files/LanguageCultureReportNov08_HASC.pdf

Longo, Brigadier General R. C. (2008, September). Statement before the House Armed Services Committee Oversight and Investigations Subcommittee Second Session, 110th Congress. Retrieved March 17, 2011, from http://www.gpo.gov/fdsys/pkg/CHRG-110hhrg45596/pdf/CHRG-110hhrg45596.pdf

MacMillan, J., J. Freeman, G.L. Zacharias, B. Bullock, & J. Pfautz. (2010, August). *Strategic roadmap for human social, cultural, and behavioral science and technology.* Washington, DC: Aptima, Inc.

Marine Corps Combat Development Command (n.d.). Retrieved August 17, 2011, from https://www.mccdc.usmc.mil/

Marine Corps Vision and Strategy 2025. (2008). Retrieved May 2011, from http://www.marines.mil/news/publications/Documents/Vision%20Strat%20lo%20res.pdf

Matsumoto, D., LeRoux, J., & Schaab, B. (in review). Evaluation of GlobeSmart Commander (GSC). Arlington, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.

McCloskey, M. J., Behymer, K. J., Papautsky, E. L., Ross, K. G., & Abbe, A. (2010). *A developmental model of cross-cultural competence at the tactical level* (No. A811435). 361 Interactive, LLC: Springboro, OH.

McFate, M. (2007, February). *Socio-cultural knowledge for counterinsurgency* (IDA P-4187). Institute for Defense Analyses Research Report.

Miyoshi Jager, S. (2007, November). *On the uses of cultural knowledge.* Valid as of November 9, 2011: http://www.strategicstudiesinstitute.army.mil/pdffiles/PUB817.pdf

Monitor 360 (2009). Retrieved August 17, 2011, from http://www.360.monitor.com /about_us.html

NATO Research and Technology Organisation (2008, April). *Adaptability in Coalition Teamwork* (RTO-MP-HFM-142). Papers presented at the RTO Human Factors and Medicine Panel (HFM) Symposium, Copenhagen, Denmark.

Naval Air Warfare Center Training Systems Division (n.d.). Retrieved August 17, 2011, from http://nawctsd.navair.navy.mil/AboutUs/Mission.cfm

Naval Aviation Enterprise (2006). *Science and technology strategic plan*. Retrieved from Office of Naval Research, Valid as of November 9, 2011: http://www.navair.navy.mil/osbp /atc/presentation/NAE_S&T_Plan_final_wdistro.pdf

Naval Education and Training Command (n.d.). Retrieved August 17, 2011, from https://www.netc.navy.mil/Mission.aspx

Office of Naval Research (2011). Broad Agency Announcement: Human Social Cultural and Behavioral Sciences

(HSCB) Applied Research and Advanced Technology Development. ONR BAA Announcement #ONRBAA11-014

Office of Naval Research (n.d.). Retrieved August 17, 2011, from http://www.onr.navy.mil/en/About-ONR/science-technology-strategic-plan.aspx

Office of the Assistant Secretary of the Army for Acquisition, Logistics, and Technology (n.d.). ASAALT organization. Retrieved October 18, 2011, from https://www.alt.army.mil/portal/page/portal/oasaalt

Office of the Secretary of Defense (OSD) RDT&E Budget Item Justification (2007). *Human, social and culture behavior modeling (HSCB) advanced development* (PE No. 0603670D8Z). Retrieved August 17, 2011, from http://www.dtic.mil/descriptivesum /Y2008/OSD/0603670D8Z.pdf

Office of the Under Secretary of Defense for Personnel and Readiness (n.d.). DLO Mission & Vision. Retrieved June 15, 2011, from http://prhome.defense.gov/READINESS/DLO/MISSION.ASPX

Ooink, B. (2008, Nov.). *The cultural backpack: Training soldiers to operate in unfamiliar environments.* Radboud University Nijmegen, Royal Netherlands Army. Retrieved December 10, 2013 http://gpm.ruhosting.nl/mt/2009MASG26OoinkBas.pdf

Operational Cultural Awareness Training (OCAT) Okinawa (2011). Japan Earthquake 2011 Support. Valid as of November 9, 2011: https://community.apan.org/hadr/japan_earthquake/m/ files1/60113.aspx

PDRI (2011). Retrieved August 17, 2011, from http://www.pdri.cm/index.html

Pool, R. (2011). *Socio-cultural data to accomplish department of defense millions: Toward a unified social framework*. Washington, DC: The National Academies Press.

Prasolova-Førland, E., Fominykh, M., Darisiro, R., & Mørch, A. I. (2013) *Training cultural awareness in military operations in a virtual Afghan village: A methodology for scenario development.* 46th Hawaii International Conference on System Sciences (HICSS).

RAND Corporation (2011). Retrieved August 17, 2011, from http://www.rand.org/about /history.html

Rentsch, J. R., Mot, I., & Abbe, A. (2009, June). *Identifying the core content and structure of a schema for cultural understanding.* Technical Report 1251 (Army Project Number 622785A790). Arlington, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.

Ross, K. G. (2008, Spring). *Toward an operational definition of cross-cultural competence from interview data*. DEOMI Internal Report CCC-08-1.

Ross, K. G., Grome, A., Arrastia, M. C., Schaab, B., Ong, J., & Spangler, D. (in review). *Development of training themes for joint, interagency, intergovernmental and multinational (JIIM) operations*. Arlington, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.

Salas, E. (2011, Mar). Decision-making and stress in multicultural teams. Invited keynote speaker for track theme: Technology in Culture Education and Training. TRADOC Culture Summit V. Fort Huachuca, Arizona.

Salmoni, B. A., & Holmes-Eber, P. (2008). *Operational culture for the warfighter: Principles and applications*. Quantico, VA: Marine Corps University Press.

Schaab, B., & Morris, R. C., Jr. (in review). *Comparison of cultural values of U.S. college students and U.S. Army soldiers.* Arlington, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.

Schaab, B., DeCostanza, A. H., & Hixson, C. (in review). *Behavioral, attitudinal, and cultural factors influencing interagency information sharing.* Arlington, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.

Soeters, . L., & Recht, R. (2001). Convergence or divergence in the multinational classroom? Experiences from the military. *International Journal of Intercultural Relations, 25,* 423-440.

The Human Terrain System (2011). Retrieved August 17, 2011, from http://humanterrainsystem.army.mil/

U.S. Air Force (2009, May). *Air Force Culture, Region & Language Flight Plan.* Valid as of Novemver 9, 2011: http://cultureandsecurity.yolasite.com/resources/ flightplan%20Gen%20Schwarz%205-09.pdf

U.S. Air Force (2011, March). *Developmental levels for language, region and culture learning in the US Air Force.* [Backgrounder from U.S. Air Force Culture and Language Center], pp. 1–3.

U.S. Army Corps of Engineers Army Geospatial Center (n.d.). Retrieved August 17, 2011, from http://www.agc.army.mil/

U.S. Army Corps of Engineers Construction Engineering Research Laboratory (2011). Retrieved August 17, 2011, from

http://www.cecer.army.mil/td/tips/product/details.cfm?ID=458

U.S. Army Intelligence Center of Excellence (2011, Jan – Mar). *Cross-Cultural Competence* Military Intelligence Professional Bulletin [Special Issue], 37 (1), 1-140).

U.S. Army Research Institute for the Behavioral and Social Sciences (n.d.). Retrieved August 17, 2011, from http://www.hqda.army.mil/ari/about/mission.shtml

U.S. Army Research Laboratory (2011). Retrieved August 17, 2011, from http://www.arl.army.mil/www/default.cfm?page=231

U.S. Army Training and Doctrine Command (2008, April). *The U.S. Army Study of the Human Dimension in the Future: 2015-2024* (TRADOC Pamphlet 525-3-7-01). Valid as of November 9, 2011: http://www.tradoc.army.mil/tpubs/pams/p525-3-7-01.pdf

U.S. Army Training and Doctrine Command (2011). Retrieved August 17, 2011, from http://www.tradoc.army.mil/about.htm

United States Marine Corps (1940). *Small wars manual* (NAVMC 2890). Retrieved November 15, 2010, from http://www.au.af.mil/au/awc/awcgate/swm/full.pdf

University of Maryland Center for Advanced Study of Language (2011). Retrieved August 17, 2011, from http://www.casl.umd.edu/about

USMC Center for Advanced Operational Culture Learning (CAOCL) (n.d.). Retrieved August 17, 2011, from http://www.donhcs.com/hsr/20_october/doc/19_CAOCL%20Vision.pdf

Van Hemert, D. A., de Koning, L., & van den Berg, H. (n.d.). Interpersonal influence in cross-cultural interactions. North Atlantic Treaty Organization (NATO) Technical Report RTO-MP-HFM-202. Retrieved December 10, 2013 from http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0CCgQFjAA&url=http%3A%2F%2Fftp.rta.nato.int%2Fpublic%2FPubFullText%2FRTO%2FMP%2FRTO-MP-HFM-202%2FMP-HFM-202-07.doc&ei=Z4R_U9boC4ygsQSbz4HYDw&usg=AFQjCNEBgTJi5GgYGx1T7Uuu6nuoo3S1UQ&bvm=bv.67720277,d.cWc

Warren, R. & Sutton, J. (2005). *Using a computer game for research on culture and team adaptability: Lessons learned from a NATO experiment*. Meeting Proceedings RTO-MP-HFM-142, Paper 8. Neuilly-sur-Seine, France: RTO. Available from: http://www.rto.nato.int/abstracts.asp.

Weinberger, S. (2011, March 30). Social science: Web of war. *Nature, 471*, 566–568.

Appendix A
Additional DoD References Not Cited in Body of Report

NAME OF SOURCE	LINK OR AUTHOR
Army Publishing Directorate	http://www.apd.army.mil/
Center for Army Lessons Learned (CALL)	http://usacac.army.mil/cac2/call/index.asp
CIA World Factbook	https://www.cia.gov/library/publications/the-world-factbook/
Defense Acquisition University training site	http://www.dau.mil/Training/default.aspx
Defense Connect Online (DCO)	https://www.dco.dod.mil/public/dsp/dco_login.cfm?banner=true
Defense Technical Information Center (DTIC)	http://www.dtic.mil/dtic/
Foreign Area Officer (FAO) Web	https://myfao.nps.edu/web/fao
Global Cognition	http://globalcognition.org/Articles.html
GlobeSmart Commander	http://www.globesmartcommander.com/
Human Terrain Teams	http://humanterrainsystem.army.mil/
Marine Corps Center for Lessons Learned	https://acc.dau.mil/CommunityBrowser.aspx?id=23451&lang=en-US
Milgaming	https://milgaming.army.mil/
Navy Knowledge Online (NKO)	https://wwwa.nko.navy.mil/portal/home/
Open Source Center (OSC)	https://www.opensource.gov/
Adaptability in Coalition Teamwork	NATO RTO (2008)
Air University Quality Enhancement Plan 2009–2014: Cross-Culturally Competent Airmen	Air University (2009)
Applications in Operational Culture: Perspectives from the Field	Holmes-Eber et al. (2009)
Assessing the Development of Cross-Cultural Competence in Soldiers	McCloskey et al. (2010)
Comparison of cultural values of U.S. college students and U.S. Army soldiers	Schaab et al. (in review)
Cross-Cultural Competence [Special Issue]	U.S. Army Intelligence Center of Excellence
Behavioral, attitudinal, and cultural factors influencing interagency information sharing	Schaab, DeCostanza, & Hixson (in review)
Development of training themes for JIIM operations	Ross et al. (in review)
Framing the Cultural Training Landscape	Alrich (2008)
Improving the Organizational Effectiveness of Coalition Operations (HFM 163)	NATO Research and Technology Organization[1]
Japan Earthquake 2011 Support	Navy Operational Cultural Awareness Training (OCAT) Briefs
Skill Level Descriptions for Competence in Intercultural Communication (Draft)	Interagency Language Roundtable (2011)
Social Science: Web of War	Weinberger (2011)
Soldier Manual and Training Guide for Civil Affairs	http://armypubs.army.mil/doctrine/soldier_manual_1. html[2]
Small Wars Manual	US Marine Corps (1940)

Note. [1]Cannot access scientific report; [2]Cannot access guide.