

## 4 Training for sociocultural behavior understanding in operational environments<sup>1</sup>

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### 1. Sociocultural Behavior Understanding

From the intelligence analyst in the command center identifying deviations from typical patterns of life to the small unit leader on the ground negotiating with a village elder, the ability to understand sociocultural behavior is vital for achieving mission success. According to Schmorrow (2011), accurate analysis of sociocultural behavior requires a “thorough perception and comprehension, grounded in social and behavioral science, of the sociocultural features and dynamics in an operational environment” (p. 42).

A solid understanding of sociocultural behavior enables warfighters to recognize subtle details that reveal critical information about cultural and social norms when observing interactions in unfamiliar cultural settings. For example, Figure 1 shows a group of Somalis holding a meeting at the edge of their village. Though many individuals, even those unfamiliar with Somali culture, may immediately identify the leader of this meeting and his entourage (the group standing), they might well miss the more subtle cues in the picture that would allow them to gain a more in-depth understanding of the cultural environment. For example, the majority of the men not part of the leadership group are seated in the shade, while the women and children are seated in the sun. This observation provides information about the likely social structure of this society and the role that gender plays.

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*Figure 1. Village Meeting in Somalia. Adapted with permission from UNAIDS.org (2013).*

Context appreciation and an understanding of normal patterns within an operating environment are crucial for making sense of the ambiguous situations that warfighters frequently encounter. Such understanding, for example, enables a full motion video (FMV) analyst tasked with providing convoy overwatch to realize that a single shepherd surrounded by a flock of sixty sheep in a position that could provide overwatch of the route is probably not a cause for concern; however, three ‘shepherds’ with two sheep in the same position definitely is. Similarly, a member of a route clearance team that must ensure a route is free of improvised explosive devices (IEDs) needs a solid understanding of social, regional, and cultural features to identify and make sense of ambiguous cues. For example, the physical environment may dictate different IED emplacement tactics: command wire IEDs are primarily used on paved roads whereas pressure plate IEDs are used on unimproved roads. The visual indicators of these types of IEDs differ and can be very hard to detect, as they may include very common items (culverts, yellow jugs) or be inherently difficult to see (disturbed earth). Thus, route clearance personnel must have the knowledge to determine whether a yellow jug by the roadside is being used as a delivery vehicle for homemade explosives or to transport cooking oil. An accurate assessment of the cultural environment is critical to making sense of these visual cues.

Unfortunately, the early stages of recent conflicts in Afghanistan and Iraq demonstrated a clear capabilities gap: military personnel at all levels received insufficient cultural training, troops on the ground were not prepared to leverage cultural information to enable mission success, and intelligence analysts did not integrate cultural analyses into their products (Connable, 2009). As

one soldier stated, “I had perfect situational awareness [in regard to things such as the location of enemy tanks]. What I lacked was cultural awareness” (McFate, 2005, p. 43).

To address these gaps, the U.S. Department of Defense has funded government, industry, and university laboratories to develop effective technology-based training for understanding sociocultural behavior. This chapter discusses these state-of-the-art training technologies and how best to bring them into operational use. We first summarize training technologies already in existence or currently in development. Next, we discuss the gaps in existing training that these technologies can help bridge as well as the challenges associated with integrating these training technologies into the operational environment. Finally, we provide suggestions on overcoming these implementation challenges.

## 2. State-Of-The-Art Training Tools

Given the scope of this chapter, we do not attempt to provide an exhaustive description of every available or emerging technology that supports training in sociocultural understanding. Instead, we describe existing technologies within two categories based on their primary emphases: *interpersonal interaction* and *group- or population-level dynamics*. We briefly describe the defining characteristics of each category and provide a few instances of technological tools under development or recently developed.

### 2.1. Improving Interpersonal Interactions

Tools with an emphasis on interpersonal interactions use text, video, or a virtual environment to present users with a scenario involving simulated interaction with foreign nationals. Independent of the medium used, training technologies typically ask users to interpret the behavior of foreign nationals within a situation and/or to choose culturally appropriate courses of action at different points in the scenario. Often, the scenarios reinforce lessons taught during a preceding multimedia tutorial for the specific culture in which the scene takes place, and incorporate multiple-choice questions to assess the user’s knowledge (and provide feedback) during the interaction.

The armed services often implement technological tools with an emphasis on interpersonal interactions to train users to understand and interact with foreign nationals within a specific culture (e.g., Afghanistan). While they expect some skill transfer to occur across cultures, the developers tailor these tools for specific cultures in order to improve the sociocultural understanding that supports face-to-face interpersonal interaction with members of that culture. Thus, they often integrate common acceptable behaviors and cultural taboos (i.e., ‘do’s and don’ts’) of the specific culture into their lessons.

Some researchers had developed structured training materials and exercises that addressed sociocultural understanding training before the advent of sophisticated computer technologies (see Bhawuk & Brislin, 2000, for a review). While these technologies do *not* represent the state-of-the-art, they deserve special mention as the predecessors of many technologies described in this section; they also had an impact on the training techniques currently used in cultural training

schools. For example, culture assimilators (Fiedler, Mitchell, & Triandis, 1971) are self-administered, structured training programs that use scenarios to expose users to cross-cultural interactions and misunderstandings. Users answer multiple-choice questions regarding their understanding of the incident and receive tailored feedback (by being directed to different pages) regarding the appropriateness of their answer and the rationale behind it. Culture assimilators have undergone extensive evaluation (Bhawuk & Brislin, 2000) and have influenced the development of both training curricula and technological tools. Most of the more technologically sophisticated tools discussed below follow similar formats, but leverage video and virtual environments in an attempt to create higher fidelity and more engaging scenarios. They also have the potential advantage of providing detailed situational context that text-based scenarios would lack and that would have to be provided by a human instructor.

### **Human-Actor-Based Cultural Scenarios**

These technological tools feature human actors playing the roles of U.S. military personnel and foreign nationals in a cross-cultural scenario. While they present details about the scenario in a relatively passive way (i.e., no user input), movie-quality videos facilitate ‘immersion’ in the situation and engagement during the sensemaking and decision process. Army 360 and Visual Expeditionary Skills Training (VEST) fall into this category. Because the two have similar structure and format, we only describe Army 360, which resulted from a 2008–2009 partnership between the Army and InVism, Inc. Each scenario in Army 360 is preceded by a ‘mission briefing’ — a multimedia tutorial with information relevant to the upcoming scenario, and a pre-scenario quiz to estimate the user’s baseline knowledge. Since these elements of the tool are specific to the culture of interest, these tutorials impart culture-specific knowledge. After users complete the pre-scenario quiz, Army 360 presents them with movie-quality reenactments of scenarios in the foreign cultural environment of interest. At different points during the scenario, the video presentation pauses and users are presented with multiple-choice questions regarding the behavior of foreign nationals or the course of action the user should take. Typically, users are expected to rely on information presented during the pre-scenario tutorial and to demonstrate learning when answering these questions. If a user makes an inappropriate choice (e.g., asks an Iraqi sheik to skip his prayer so that they can finish their discussion), scenarios present negative consequences associated with the action (e.g., the Iraqi sheik angrily walks out of a key leader engagement).

Today, U.S. soldiers and airmen can access Army 360 and VEST through the Army’s Training and Doctrine Command (TRADOC) Culture Center and the Air Force Culture and Language Center (AFCLC), respectively. Versions of these systems are available for a range of countries, including Iraq, Afghanistan, and Somalia. The authors are unaware of any formal evaluation conducted to assess the effectiveness of these tools to improve the sociocultural understanding of warfighters in operational settings.

### **Avatar-Based Cultural Scenarios**

These technological tools rely on virtual environments and avatars (instead of human actors) to present cultural scenarios similar to those described above. Avatar-based cultural scenarios offer the distinct advantage of greater customizability over counterparts that use human actors, since

the reactions of the avatars can be better tailored to the user's choices and actions (Sagae, Ho, & Hobbs, 2012).

The Virtual Cultural Awareness Trainer (VCAT), developed by Alelo for Joint Knowledge Online (JKO), falls into this category. Like the tools introduced above, VCAT combines multimedia tutorials that introduce users to relevant cultural knowledge (i.e., "knowledge-oriented learning activities," Johnson, Friedland, Schrider, Valente, & Sheridan, 2011) and scenarios that require users to make decisions about the meaning of the foreign national behavior and preferred courses of action (i.e., "skill-oriented role-playing scenarios," Johnson et al., 2011). During the scenarios, the user controls the behaviors and communications of the avatar representing the U.S. warfighter. The behavior of the avatars representing foreign nationals responds to the user's choices. For example, "characters will reciprocate and become more friendly and cooperative" when users engage in appropriate behavior and build rapport with foreign nationals (Johnson, Friedland, Watson, & Surface, 2012, p. 17). VCAT also includes supplementary materials regarding language (e.g., key phrases for the region), gestures, and advice from experienced warfighters in the form of interviews.

While the authors could locate no specifics on evaluations, Johnson (2013) reports having "conducted studies to evaluate both the immediate and long-term effectiveness of VCAT training. Surveys of learners and their supervisors, conducted after the learners had deployed overseas, indicated that the training had long-term benefits" (Johnson, 2013, p. 2). VCATs for Northern Africa, the horn of Africa, South America, and Afghanistan are available through JKO; Alelo reports it is also developing VCATs for Central America, the Caribbean, China, and Southeast Asia (Alelo, 2013).

## **2.2. Understanding Group- or Population-Level Dynamics**

The second group of technology-based tools aims at developing observation skills so that users can better understand key features of unfamiliar cultural environments. While these tools are typically implemented for specific (or sets of specific) cultures, they are designed to train culture-general skills that the user could then apply to any novel cultural environment. For example, these tools emphasize searching for patterns of behavior in the environment so that users can better understand what is normal in that setting (i.e., 'baseline' or identify 'patterns of life'), and consequently develop the ability to identify deviations from the baseline. As illustrated in the subcategories below, tools within this category vary in their technological sophistication and degree of interactivity.

Again, structured training exercises that predated the development of more sophisticated technological tools deserve some mention here. In particular, simulation games, such as BaFa BaFa (Shirts, 2013), have certain commonalities with technological tools under this category. While BaFa BaFa has had greater influence on training schools than on the state-of-the-art technological tools presented below, this structured exercise constitutes an example of an early attempt to systematically train culture-general observation and sensemaking skills. BaFa BaFa consists of a 1.5-hour group exercise in which two subgroups are assigned to two fictitious cultures and asked to behave according to a set of cultural rules. One member of each subgroup is tasked to observe the

behavior of the other subgroup and learn as much as possible without asking questions. The observer then brings this information to his or her subgroup, the subgroup members then collaboratively attempt to make sense of the other subgroup's culture and formulate hypotheses about the most effective way to interact with the members of that culture.

### **Multimedia Tutorials**

Multimedia tools typically include an instructor-guided lecture, as well as audiovisual demonstrations of the concepts being explained.<sup>2</sup> The video medium facilitates independent, on-demand learning, as well as the use of realistic examples. In all of the instances we found, these tutorials were used to complement other training methods (e.g., interaction-oriented technologies, human-administered training).

As an example, the Marine Corps Warfighting Laboratory developed Combat Hunter Computer-Based Trainer (CBT) to support human-administered training that facilitates a more proactive mindset in operational settings. Specifically, the tool aids in training Marines to look for patterns of life so that they can more effectively identify “what is here that should not be here; and what should be here that is not” (Hilburn, 2007, p. 60). Drawing lessons from rural hunters, individuals from inner-city backgrounds, law enforcement officers, and experienced warfighters, the Combat Hunter CBT includes a series of tasks and exercises aimed at developing users' observation, profiling, and tracking skills in operational settings. A series of instructor-guided tutorials targets the skills (e.g., observation, profiling) to be learned, as well as the use of tools (e.g., binoculars) to enhance performance. The CBT prepares participants for the Combat Hunter training by providing some of the declarative knowledge beforehand and enabling human trainers to spend more time interacting directly with users to train them in the desired skills (Schatz & Nicholson, 2012).

The Combat Hunter Fact Sheet (Office of Naval Research, 2013, p. 2) reports that “empirical outcome testing” conducted “with control and experimental groups of Marines at the School of Infantry East in September and October 2010 ... validated the utility, engagement, and instructional efficacy of the software.” The Marine Corps currently uses the Combat Hunter CBT in its training program.

### **Interactive Data Visualization**

Accessing relevant and reliable sociocultural information about countries of interest and directly comparing these countries along key dimensions often presents a challenge. Interactive data visualization offers a centralized medium for obtaining comparable data on key dimensions across countries. Moving away from an exclusively text-based medium can assist users to better explore trends within a country, compare high-level cultural variables to U.S. norms, and generate expectations for upcoming deployments.

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<sup>2</sup> The pre-interaction tutorial used in conjunction with the interaction-oriented technologies described in the previous section would also fall under this multimedia-tutorial category. However, those technologies emphasize culture-*specific* practices and knowledge rather than culture-general skills.

The visualization tool in the Preparation Module of CultureGear falls into this category. 361 Interactive, LLC, is developing CultureGear under the sponsorship of the Office of Naval Research (ONR). The visualization component aids users in directly comparing critical cultural dimensions across multiple countries and/or within a single country across time (McCloskey, Behymer, & Mateo, 2012). For example, Figure 2 shows that the user has selected ‘population growth rate’ from the Social Factors tab of the menu. The population growth rate for each country is represented graphically on the world map via color coding, with warm colors (red, orange, yellow) representing positive growth rates and cool colors (blue, green) representing negative growth rates. A quick glance can show the user that the population of Europe is declining while the population of Africa is on the rise. A comparison analysis tool enables the user to gain more information about a particular country’s population growth rate over the past few years and to view trends of multiple countries side by side. The information currently used in CultureGear’s Preparation Module is imported from the online Central Intelligence Agency (CIA) Factbook. While reception by military cultural trainers and leadership has been positive, the Preparation Module has not yet been formally evaluated or integrated into Armed Forces programs.

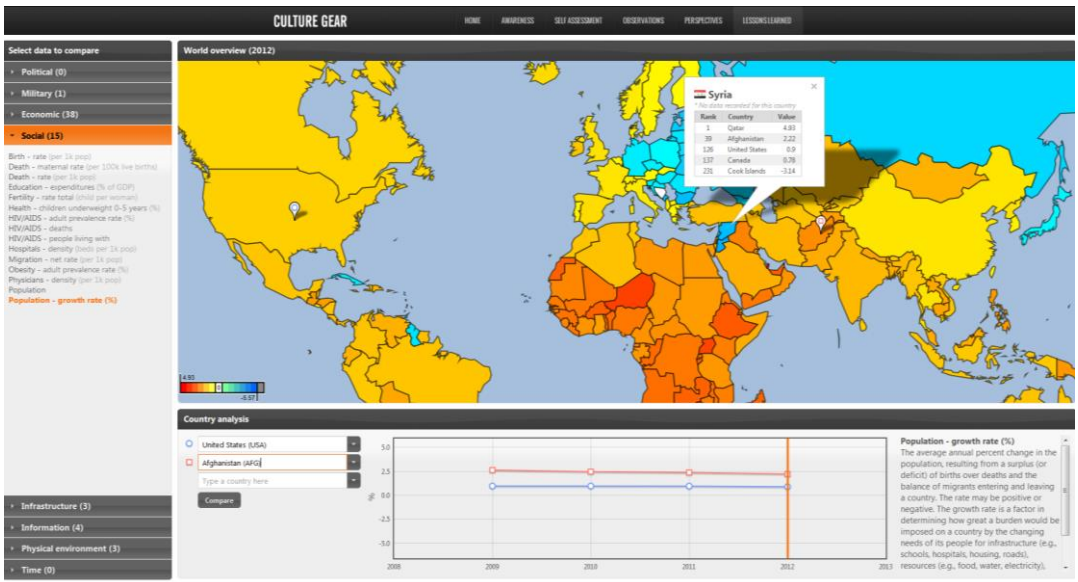


Figure 2. Screenshot of CultureGear’s interactive visualization tool.

### Interactive Tools Using Real-World Imagery

Interactive tools utilizing real-world images to train the perceptual/observational skills of warfighters typically ask participants to identify and explain aspects of a scene that are relevant for sociocultural understanding. Both the Observations Module of CultureGear and the Difference-Spotting Exercise of Combat Hunter fall under this category. The Observations Module of CultureGear consists of a collection of geo-tagged images depicting scenes from actual U.S. Army deployments (many images include both U.S. forces and foreign nationals). Users are asked to tag

the critical elements or aspects within each scene that are relevant for sociocultural understanding and to explain the sociocultural relevance of those elements or aspects. After submitting their responses, users compare their selections and rationales with those of a consensus of culturally experienced warfighters and cultural experts (see Figure 3). Users also complete a quiz about their understanding of the scene. Again, they can check whether their answer to each question matches the experienced warfighters' responses and the aspects of the scene that experts used to make their assessments.

Researchers recently assessed the effectiveness of CultureGear in improving observation performance among junior warfighters (Mateo, Behymer, & McCloskey, 2013). Users who received CultureGear training showed faster and more accurate performance than control participants during observation tasks. No operational forces currently use CultureGear, but 361 Interactive has a teaming agreement in place with the John F. Kennedy Special Warfare Center and School (JFKSWCS) to support its integration into their operational training curricula over the next three years.

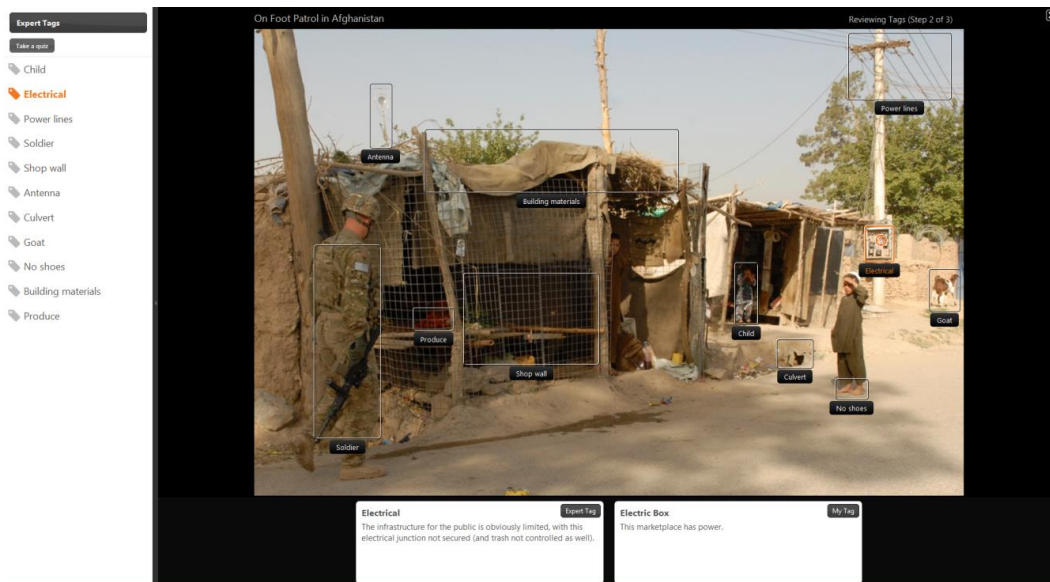


Figure 3. Screenshot from CultureGear's Observations Module.

The Difference-Spotting Exercise of Combat Hunter involves the presentation of two seemingly identical scenes and asks users to identify the differences between them. According to Hilburn (2007), Marines can access these exercises while deployed to practice their observation skills.

Developers are also building interactive tools using real-world imagery to assist intelligence, surveillance, and reconnaissance (ISR) analysts in understanding unfamiliar cultural environments. The type of imagery used for the ISR domain is more typically a bird's eye view of the scene than a



ground-level perspective. However, tools such as the Cognitive Desktop Analysis Trainer (C-DAT) use a procedure similar to those used in the Observations Module of Culture Gear and the Imagery Exercise of Combat Hunter. C-DAT shows FMV analysts both simulated and real-world FMV and asks them to identify patterns of life and recognize deviations from normal activities (e.g., unexpected individual behaviors) in real time. Users also answer questions that probe their sociocultural understanding of the cultural scene. For example, in Figure 4 the trainee has correctly identified a construction crew working on a mosque as an item of interest and now must select why this event is significant from the list on the right. If the trainee gives an incorrect answer, the tool highlights the correct answer and explains the rationale behind that choice. C-DAT also has a game-like scoring system to increase engagement and competitiveness among trainees. As C-DAT is an experimental tool currently under development, its effectiveness has not been formally evaluated, nor has it been employed in operational settings.



Figure 4. Screenshot of C-DAT Training System.

### Interactive Tools Using Virtual Environments

Like interaction-oriented technological tools, interactive tools with an emphasis on understanding group- or population-level dynamics could leverage virtual-environment technologies. To our knowledge, no current technological tools use virtual environments and avatar-based scenes to improve the perceptual/observational skills of users beyond interpersonal interactions. However, ONR has funded the PerceptTS project to create such a tool. Following the Combat Hunter philosophy, this project aims at developing a virtual training environment (“Virtual Ville”) in which participants can complete Combat-Hunter-like training (Schatz & Nicholson, 2012). This project is expected to be completed in the 2015–2016 timeframe.

### **3. Science And Technology Gaps**

#### **3.1. Lack of Training Tools for Intelligence Analysts**

“Although the Intelligence Community is full of world-class expertise on foreign peoples, places, and organizations, this industry rarely isolates and illustrates culture as a factor deserving its own sophisticated and thorough treatment.” (Johnson & Berrett, 2011, p. 2)

Current training efforts and those in development seem to focus primarily on small unit leaders interacting with foreign nationals on the ground. Many existing and emerging tools are designed to improve understanding in the context of one-on-one interactions as opposed to understanding group or population-level dynamics. By contrast, almost no training tools exist for the intelligence analysis and strategic planning levels, even though dramatic changes in sensor technologies and the nature of warfare over the past several decades have made it increasingly important for ISR analysts to have sociocultural understanding to successfully detect and interpret critical events.

During the Cold War era, ISR analyst tasking was relatively simple, perhaps involving monitoring of an adversary’s physical assets, including tanks, missiles, and planes (Bryant, Johnson, Kent, Nowak, & Rogers, 2008). Today’s ISR analyst, however, may be tasked to detect, observe, interpret, and predict patterns of life activities—for example, to identify networks associated with terrorist cells—while simultaneously assessing the cultural and contextual aspects of the surrounding regions. The same visual stimulus—a man digging near a road—might represent a critical event that the analyst must not only detect but also understand within its context: Is that individual a farmer digging a trough for water or an insurgent emplacing an IED?

Despite the challenges facing intelligence analysts and the limitations of existing training, little research has focused on designing effective training to develop analytic skills. Existing pre-mission training often focuses on basic intelligence principles and analysts only gain an understanding of sociocultural behavior through on-the-job training. This often places analysts in difficult situations. Rather than beginning their training with a relatively simple task (e.g., calling out vehicular traffic in a rural setting), many analysts must learn by confronting a very complex real-world mission scenario that involves monitoring multiple named areas of interest while trying to fulfill multiple customer intelligence requests.

#### **3.2. Valid Content Often Missing**

Tool designers often place too much focus on developing the training technology as opposed to developing the content to populate it. To be useful, training in sociocultural understanding must rest on a solid understanding of real-world constraints. One useful method for developing training content is the decision requirements table (DRT), a technique developed by Klein Associates, Inc., which captures the critical cues that experienced analysts use when making a cognitively demanding decision (Phillips, McDermott, Thordsen, McCloskey, & Klein, 1998). The DRT can also capture why a decision is difficult, the information sources that experienced analysts consult to inform their decision, the common errors novices make when reaching a decision, the strategies used by experienced analysts, and the sources of uncertainty.

Table 1. Sample, partial DRT

Challenging Decision	Why Difficult?	Cues	Factors/ Info Sources	Common Errors	Strategies	Uncertainty
Evaluate the economy in the AO	Unregulated activities are untaxed and therefore, difficult to account for (little written information or standard policies followed)	Flow of goods Prices of necessities such as gas/benzene/foodstuffs	Regional differences in what is legal and acceptable Local laws and customs	Assume that only formal and legal activities account for the economy Attempt to break down the informal economy w/ no understanding of effects	Address inequities Monitor illegal activities	Who is bribing and blackmailing whom What civilians are really thinking versus saying
	Civilians are often afraid to discuss black market activities with US forces	Overt presence of black market Observed levels of business at both proper and informal marketplaces	Prior activities Intel from informants Presence of barter systems/symbolic exchange systems Legal currency	Fail to consider long-term effects of actions. Implement an operational plan that blocks access to critical goods and services.	Recognize the role of women and children in the informal economy Recognize social customs and norms in regards to place of work (women may need/want to work in the home rather than a factory)	How will Marine operations impact the informal economy On what commodities and services does the informal economy really focus
	It may be difficult to determine who participates in informal activities	Types of currency that are predominant	Local perception of equity of distribution of goods and services	Force same price structure on both formal and informal economies	Mentally simulate effects of actions on longer-term economic health and stability of AO.	What is the true price of imposing immediate stability (3 <sup>rd</sup> order effects)
	Informal activities may be conducted from a home or in hard-to-find locations	Reactions of civilian populace when questioned regarding black markets	Economic rhythms of a community (migration, planting, harvesting, market day, work hours)	Fail to "dig deeper" into underlying issues when questioning local populaces		
	May not be clear how the formal economy relies on the informal economy	Perceived individuals who seem to control the distribution of goods	Distribution of wealth	Force or assume own value system on local economy	Use force to impose Western values on system	Who is truly controlling the informal economy

Table 1 shows a sample partial DRT based on a small set of cognitive task analysis (CTA) interviews conducted with the leaders of small Marine Corps units. The decision requirement is identified at the top of the table and the first column describes some specific reasons that can make this decision particularly challenging. In this case, the reasons why interviewees found economic analysis challenging in the context of specific situations included that informal economic activities are hard to recognize and are unregulated, and that individuals are often reluctant to discuss them. The second column describes the cues that can help analysts evaluate the economy, such as overt signs of black market activity. The third column describes information sources that individuals may consult when making the decision or knowledge they need to have (e.g., rules and laws regarding what activities are legal in a region). The fourth column identifies common errors that novices might make (e.g., assuming that only formal, regulated, and legal activities are part of the economy). The fifth column lists strategies that experts may use to support their decision making, such as active monitoring for illegal/unregulated activities. The final column identifies common sources of uncertainty that may increase the difficulty of making an assessment or decision.

DRTs can be used in several ways to direct scenario development. They serve as sources of information about how to make a scenario more or less challenging. They also indicate means for evaluating the trainees' decisions during a scenario by outlining common errors and successful

strategies and by denoting the knowledge that should be presented or available to trainees within or before the scenario as well as the resources trainees should be able to access. They also contain the critical perceptual cues that should be represented within cognitively authentic scenarios.

### **3.3. Limitations of Frameworks as a Tool for Understanding**

While frameworks are typically seen as useful tools to aid understanding of new environments, they may lead to oversimplification of sociocultural complexity. Additionally, training tools based on these frameworks often assume that warfighters can ascertain ground truth. For example, one of the tools we examined presents trainees with the following information: “In Iraq, Shia Muslims typically wear black-and-white headdresses while Sunni Muslims wear red-and-white headdresses.” Trainees are then shown a video of an Iraqi wearing a black-and-white headdress and asked to identify whether he is a Shia Muslim or a Sunni Muslim. Compare this situation to the following training scenario, derived from a real-world incident described to us during a CTA interview:

It is now the third month of your mission and you have established a friendly, yet fragile, relationship with a local village elder. One day during a standard patrol of the village, your interpreter begins a conversation with a trusted “source” on the street. The source tells your interpreter that one of the top insurgents in the country is holing up in a house on the far side of the village. To capture this insurgent would put a major dent in the insurgents’ networks. You head toward the house and on the way you come across the village elder. You inform him of this intelligence and he immediately gets visibly upset. In that house, he tells you, is one of the most respected families in the village, and they are close personal friends of the elder. He assures you that your intelligence is wrong and that there is no way they could be holding this insurgent. If you raid the house, he says, the entire village will be very angry, including himself and his councilmen, who have just arrived and who seem as irritated as he is.

In this far more complex situation the warfighter cannot establish ground truth before taking action. If the warfighter opts to raid the house and the insurgent is not there it could have tragic consequences for U.S. forces’ relationship with the village elder and the village. If the warfighter decides to trust the elder and it turns out that the insurgent is in the house, not capturing him may have tragic consequences for U.S. forces.

To prepare warfighters for this type of ambiguous situation, cultural training must teach trainees “how to think” rather than “what to think.” Training limited to “this category of people wear this kind of clothing” offers little help for understanding sociocultural behavior; instead, training should focus on developing the skills necessary to make informed decisions in complex cross-cultural situations (Salmoni & Holmes-Eber, 2008).

### **3.4. Lack of Easily Updatable Training Tools**

During the past ten years many developers of cultural training tools, whether cultural-general, region-specific, or language tools, had a specific goal: supporting warfighters deployed to Afghanistan and Iraq. To this end, the majority of training tools we have reviewed use training scenarios set in one of these two countries. However, the U.S. military has already withdrawn from

Iraq and is planning to withdraw from Afghanistan. Thus, end users may not have a positive view of training whose content focuses solely on these countries. As one trainer told us, “We’re out of Iraq, I don’t care about Iraq.”

As the military cannot predict future deployment locations with complete accuracy, warfighters must be prepared to understand sociocultural behavior whether they will assist in disaster relief efforts in Haiti, provide intelligence to North Atlantic Treaty Organization (NATO) forces operating in Libya, or intervene in failed nation-states such as Somalia. Effective training tools should include scenarios in multiple cultural environments with the goal of imparting skills that can be effective in any cultural environment. Even region-specific training tools should include mechanisms that allow the trainers who use them to easily update existing content or generate new content appropriate to the next conflict. Both cultural trainers and trainees may soon view a training tool that cannot be easily updated as obsolete.

### **3.5. Lack of Empirical Validation**

Few of the technological tools developed to improve warfighters’ sociocultural understanding in operational settings have undergone significant empirical validation. This gap applies to both didactic methodology and content.

#### *Didactic Methodology*

The tools described in the previous section use various means to promote trainee learning. For example, Combat Hunter CBT, Army 360, and VCAT include a tutorial as part of their didactic methodology, whereas CultureGear does not. Most (e.g., Army 360, VEST, CultureGear’s Observations Module) include quizzes as part of their testing/feedback mechanism, but others do not (e.g., Combat Hunter CBT, CultureGear’s Preparation Module).

Tools provide performance feedback along a continuum from direct/explicit to indirect/implicit. For instance, some of the tools with quizzes (e.g., CultureGear’s Observations Module, C-DAT) give explicit ‘right/wrong’ feedback to trainees and explain the rationale; other tools (e.g., Army 360, VEST) provide ‘right/wrong’ feedback by allowing learners to experience the consequences of their choice; and avatar-based tools include more implicit feedback (e.g., increasingly subtle changes in avatar behavior when the user engages in appropriate behaviors). For the most part, these tools do not incorporate any explicit mechanism to encourage practice of appropriate behavior among trainees. However, game-based tools such as C-DAT do convert performance into a score that trainees attempt to maximize, thus encouraging trainees to supply appropriate responses and compete successfully with peers.

Independent of the content taught, a tool must demonstrate its ability to effect change in the trainee. Quantitative evaluations of didactic methodologies used in tools to enhance sociocultural understanding are rare (see Mateo et al., 2013, for one exception). Even rarer are comparisons across different didactic methodologies to determine the most effective feedback mechanisms and guide the development of future tools to enhance sociocultural understanding.

### *Content*

While ensuring that a tool can improve trainee knowledge is an important first step, military organizations must also know that the resulting change will ultimately have a positive impact on sociocultural understanding and performance in operational settings. Imagine for a moment that you have two weeks to provide cultural training to a class of 20 warfighters. Researchers from a government, industry, or academic laboratory present you with a cultural training tool that, on the surface, appears to fit well with your training curricula. Before you decide to spend your limited amount of time and departmental resources on incorporating this tool into your curricula you want some assurance. How can you know that this tool will actually improve trainee performance? In other words, how valid is the content of the training tool?

Accurate measurement of mission effectiveness, especially as it relates to the role played by sociocultural understanding, is critical to validate training technologies. Existing training rarely has good assessment techniques to evaluate the usefulness of the content as it relates to performance in operational settings (mission effectiveness). Unfortunately, little empirical evidence exists to demonstrate that cultural training improves the mission effectiveness of warfighters (DeCamp et al., 2012). A key reason for this lack of empirical content validation lies in the lack of adequate methods for measuring mission effectiveness (DeCamp, Meadows, Costa, Williams, Bornmann, & Overton, 2012). The Department of Defense would benefit from methods that can measure and assess individuals' understanding of sociocultural behavior in an operational environment.

## **4. Barriers To Adoption**

In the authors' experience, several barriers currently inhibit the adoption of technologies to support cultural training. All these challenges may have a common feature: the inherent complexity and uncertainty of the underlying constructs that such training addresses. Typical training efforts have clear and certain objectives: they train warfighters to be better marksmen, more knowledgeable tacticians, or clearer communicators. But the competencies that underlie the inherently complex construct referred to as sociocultural understanding are still under debate within the research and operational communities. Should training focus on affective attributes (e.g., changing perceptions, biases, and attitudes), behavioral skills (e.g., developing better persuasive techniques), or cognitive skills (e.g., observing and interpreting intercultural dynamics in complex environments)? The answer seems to be a combination of all three, and likely depends upon the mission sets of the specific recipient group.

Cross-cultural skills remain a nascent concept within the military training and research communities, and are associated with a wide range of theoretical models and guiding frameworks. Each military branch (and within-branch training group) must choose the most appropriate foundations for its purposes. As a result, discord abounds over the identification of the "one best" cultural competence model to promote, or the single set of baseline skills to train.

### **4.1. Training Differences among Military Branches**

"The cultural awareness training landscape is diverse, with an array of textures, colors, and hues. Proverbially speaking, what is missing from the picture is the frame" (Alrich, 2008, p. 2).

In a study that sought to describe cultural training programs within the U.S. military, Alrich (2008) discovered a diverse and varied cultural training landscape that contained a large number of programs with differing theoretical foundations, user populations, and missions. Each training center has its own preferred theoretical frameworks and training objectives for sociocultural understanding.

For example, the U.S. Army's JFKSWCS, which provides training for Army Civil Affairs, Psychological Operations, and Special Forces soldiers, uses the PMESII-PT (Political, Military, Economic, Social, Infrastructure, Information, Physical Environment, and Time) model to train soldiers in understanding sociocultural behavior in operational environments. JFKSWCS offers two courses that focus on sociocultural understanding: *Foundations of Cross-cultural Competence (FC3)* and *Regional Analysis*. In the FC3 course, students gain understanding about the components of culture by examining their own cultures, learning how to manage their perceptions about other cultures, and investigating how other cultures view U.S. culture. Specific learning objectives (McCloskey, Behymer, Papautsky, Ross, & Abbe, 2010) include: identify the components of cross-cultural competence that promote the development of cross-cultural competence and facilitate mission success; demonstrate an openness to alternative explanations and ideas; recognize that cultures differ in significant and meaningful ways and that these differences influence behavior; formulate accurate cross-cultural understandings and assessment of situational dynamics, the perspectives of others, and the impact of cultural actions on the broader mission as well as secondary and tertiary effects; and demonstrate the ability to consistently present oneself in a manner that promotes positive short-term and long-term relationships. The Regional Analysis course teaches students a systems approach, with the desired outcome being an increase in their cultural competencies and an understanding of countries or regions based on the application of the PMESII-PT operational variables.

By contrast, the U.S. Marine Corps Center for Advanced Operational Culture Learning (CAOCL)—the central Marine Corps agency for operational culture and language familiarization—prefers to use the Five Dimensions of Operational Culture model (Salmoni and Holmes-Eber, 2008), which states that physical environment, economy, social structure, political structure, and belief systems are especially critical to understanding sociocultural behavior. CAOCL's principal educational activity consists of managing the Regional, Culture, and Language Familiarization (RCLF) Program: a career-length program designed to instill, develop, and sustain basic language, region, and culture capabilities in career Marines. The RCLF Program uses the five dimensions of culture to provide a cross-cultural competence foundation through culture-general training (helping Marines determine what they need to know and how they can build that knowledge), culture-specific training (showing the unique characteristics of the operating area organized according to the five dimensions of culture), and language familiarization (memorizing key phrases that enable mission accomplishment).

These differences are not only found *between* Military Services: training centers within the same Service often have different training theoretical foundations and training objectives as well. For example, in contrast to the approach used at JFKSWCS, the Reserve Officers' Training Corps (ROTC)

Cultural Understanding and Language Proficiency (CULP) focuses on preparing participants in the ROTC Culture and Language Immersion Internship Program. During that three-week program the cadets interact with the local populace (in countries such as China, Egypt, Ghana, Mongolia, Morocco, Russia, Senegal, Taiwan, and Tanzania) to perform a variety of humanitarian missions. The cadets strive to achieve cultural competencies based on the Army Culture and Foreign Language Strategy Objectives (2009). A sample objective is:

Demonstrates an awareness of own cultural assumptions, values, and biases and understands how the U.S. is viewed by members of other cultures; applies perspective taking skills to detect, analyze, and consider the point of view of others and recognizes how own actions may be interpreted.

These differences in training methods and objectives create several challenges for developers of training technologies who hope to create tools that are easily generalizable across branches of the Armed Services. Despite the similarities between the PMESII-PT model and the Salmoni & Holmes-Eber model, differences in terminology can alienate both trainers and trainees. Even simple visual differences can displease potential end users. For example, during a presentation of an early version of the CultureGear tool at a cultural training center, a trainer expressed irritation that a camouflage pattern on the main screen came from a different branch of the military. While technology developers may have little difficulty adapting a camouflage pattern for each service, trying to incorporate a framework with different terminology throughout an entire training tool (e.g., replacing PMESII-PT with the Five Dimensions of Operational Culture) presents significant difficulty. Developers hoping to transition their state-of-the-art training tools into operational use must successfully navigate this complex cultural training landscape.

#### **4.2. Lack of Communication Between Trainers and Technology Developers**

When the need for cross-cultural competence training became clear, the U.S. Armed Forces created training centers and tasked them with incorporating culture within their existing curricula or developing techniques to train cross-cultural warfighters (Alrich, 2008). At the same time, the services directed researchers and technologists from government, industry, and university laboratories to develop technological solutions to support training in cross-cultural competence. Although these two lines of research and development have evolved in parallel over the past ten years, they have not communicated effectively. Technology developers have often focused their time and energy on technological advances (such as increasing the physical fidelity of virtual worlds) as opposed to determining how the end product could best support the most likely end users: trainers and trainees within military cultural training programs.

If technological tools are to be systematically integrated and utilized into military training centers, these technologies must rest on a solid understanding of the training truly needed, the training provided in these centers, and the standards and regulations that the training must meet, and must complement and enhance this training. Only then will the resulting training programs synergistically leverage the strengths of training and technological approaches to support the development of culturally competent, cognitively ready U.S. military personnel.



Additionally, it is often difficult (if not impossible) for training developers to identify individuals within existing training centers who will remain in position long enough to champion a new training tool throughout its developmental cycle. In many cases the key leader with whom technology developers partnered to ensure successful integration is reassigned to a different position before the tool can be deployed. In these cases, training developers must start from scratch with the newly appointed leader, who may have substantially different training goals and priorities from his or her predecessor.

### **4.3. Time Limitations**

Time presents one of the biggest barriers to implementing new training technologies. Warfighter training schedules are already very full (Abbe & Bortnick, 2010), and existing cultural training programs must essentially compete with other training programs that warfighters must complete (Alrich, 2008). While each branch of the military has implemented a strategy for incorporating cultural training into its training curricula (Abbe & Gouge, 2012), the cultural trainers we have interviewed still struggle to fit the material they consider essential into the limited amount of time they have to teach it. Often, the training schedule simply does not leave enough time for cultural trainers to incorporate new technologies into their lesson plans if these technologies do not fit seamlessly into the trainer's existing curricula. If a new training technology requires an additional time commitment from the warfighter, or would take valuable time from the already limited number of training hours cultural trainers have with students, the operational community will not accept it.

Furthermore, cultural trainers often have only limited time available to work with technology developers. They may therefore hesitate to volunteer their time unless they both see the value of the technology and can demonstrate the value of that technology to their leadership.

### **4.4. Severely Limited Training Budgets**

In addition to restrictions on available time for the insertion of new training technologies, the military faces increasing limits on the monetary resources available for training. While most organizations apparently consider a minimum of cultural training to be critical, that minimum typically focuses on basic knowledge of language and customs, with skills in critical assessment, awareness, and interaction viewed as nonessential. Warfighters must know to apply tactics, function as part of a cohesive team, and be masters of their weapons before the services can implement other training initiatives. Discretionary training that involves advanced technologies often comes with a hefty price tag that can be inherently inhibiting in military settings where decision makers are already struggling with continually shrinking training budgets. To achieve acceptance within military training communities, developed technologies must demonstrate that they meet a recognized critical need, can contribute to reducing overall training cost, and can accommodate training time restraints.

### **4.5. Inconsistent Leadership Recognition of Mission Relevance**

Across the Services and levels of command, some individuals still either refuse, or are unable, to recognize the importance of cross-cultural competence for warfighters. A traditional mentality of

“we are trained to fight, not to befriend” is so ingrained in some individuals that they see cultural abilities as a weakness and a focus on cultural awareness as a way to undermine the military. This mindset has become less prevalent as military personnel continue to gain appreciation of the link between cultural competence in the operational environment and mission success, but it still lingers. Until all service members recognize the importance of cultural skills to achieving mission success, resistance to training technologies that claim to promote it will remain.

#### **4.6. Communication Within and Among Funding Agencies and Military Branches**

Currently, communication among the different military branches with regard to training in sociocultural understanding can best be described as ineffective. Alrich (2008, p. 2) states that communication between different training programs, both between and within branches, is limited by “parochialism and defensiveness” as each training program has different priorities, objectives, and terminology. This lack of communication may lead to duplication of effort, and may also inhibit the cross-fertilization of state-of-the-art training methodologies across the Services.

#### **4.7. Failing to Learn from Previous Experiences**

We did not understand what was going on in ... We were in a foreign land among people of a different culture and mind-set. It was not possible to translate our objectives and strategies into actions taken by [them] ... The information sent across the cultural divide was not the information received. There was a disconnect. One thing was said and another thing was heard. The truth is, no one knew the truth. Meaning, intent, and truth were lost in translation (Dockery, 2003, p. 93).

The above quotation could very well have described warfighters’ experiences in Iraq and Afghanistan, but it actually came from a soldier assigned to an Army of the Republic of Vietnam combat unit during the Vietnam War. This illustrates that the lack of adequate cross-cultural training for warfighters long antedates operations in Iraq and Afghanistan. In fact, during the Vietnam War the U.S. Army discovered that its soldiers lacked the fundamental cross-cultural skills necessary to interact successfully with locals. As a result, the Army initiated many training programs to address this capabilities gap (Laughrey, 2008). Unfortunately, when the conflict ended the Army returned to a focus on training in conventional warfare (in response to possible moves by the Soviet Union) rather than continuing to focus on skills (such as sociocultural understanding) essential for counter-insurgency and nation-building (Laughrey, 2008). With this change in focus, the lessons learned in Vietnam were lost.

Recently adopted policies that incorporate culture into doctrine provide hope that the military will not forget the lessons relearned in Iraq and Afghanistan (Abbe & Gouge, 2012). However, the military cannot rely solely on these doctrinal changes. Training must capture the subject matter expertise obtained by soldiers who have returned from deployments in Iraq and Afghanistan so that future trainees can learn from their experiences.

## 5. Looking Forward: Getting Technological Tools Into Operational Use

"... effective sociocultural education requires a significant investment in resources and there is no 'quick fix' or 'shake and bake' solution" (Laughrey, 2008, p. 16).

As the previous section indicates, many potential obstacles prevent the Armed Services from implementing state-of-the-art training technologies within the operational community. The military has a myriad of cultural training centers, each with its own mission sets, priorities, and terminology. Trainers within these centers often hesitate to adopt training tools that might cut into the limited time and resources they have for training (and that may not actually improve trainee performance). Developers of training technology, on the other hand, often spend too much time concentrating on the technology itself rather than on determining how their tools can best assist cultural trainers and their trainees. All too often this results in tools that represent the state of the art in technology but do not meet the needs of the warfighter.

To overcome these obstacles, developers of training technology need to adopt a comprehensive, user-centered approach to training in sociocultural understanding. Practitioners (cultural trainers) and technologists (researchers and engineers) must work together to achieve a common goal, rather than to advance their preferred approaches to addressing the problem. This often requires a third party “translator” who can not only understand and elicit end user requirements and preferences, but also translate these into usable guidance for the developers of the technology. This ‘training + technology’ marriage will both improve the quality of the training program and promote the acceptance and use of technological tools in training centers—especially those that participated in and shaped the design and development of the technological solutions. For example, 361 Interactive’s work with the JFKSWCS leadership and trainers to tailor CultureGear and integrate it into their training curriculum places the end users at the forefront of the development process, validating their critical importance, and ensuring that their needs will be addressed upfront. Ultimately, only a deep and thorough understanding of the needs, desires, and challenges of the operational community can ensure that the military will accept, and indeed embrace, training technologies.

## References

- Abbe, A., & Bortnick, R. (2010). *Developing intercultural adaptability in the warfighter: A workshop on cultural training and education* (Technical Report 1279). Arlington, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Abbe, A., & Gouge, M. (2012). Cultural training for military personnel: Revisiting the Vietnam era. *Military Review*, 92, 9 - 17.
- Alelo, Inc. (2013). *Alelo awarded new contracts, expands interactive training solutions to mobile devices*. Retrieved from [http://www.alelo.com/alelo\\_inc\\_news.html#vcat](http://www.alelo.com/alelo_inc_news.html#vcat)
- Alrich, A. (2008). *Framing the cultural training landscape: Phase I findings* (IDA Document D-3709). Alexandria, VA: Institute for Defense Analyses.
- Department of the Army, Headquarters. (2009). *Army Culture and Foreign Language Strategy Objectives*. Washington, DC: Department of the Army.
- Bhawuk, D. P. S., & Brislin, R. W. (2000). Cross-cultural training: A review. *Applied Psychology: An International Review*, 49,

162–191.

- Bryant, M., Johnson, P., Kent, B. M., Nowak, M., & Rogers, S. (2008). *Layered sensing: Its definition, attributes, and guiding principles for AFRL strategic technology development*. Wright-Patterson Air Force Base, OH: Air Force Research Laboratory.
- Connable, B. (2009). All our eggs in a broken basket: How the Human Terrain System is undermining sustainable military cultural competence. *Military Review*, 89, 57–64.
- DeCamp, J., Meadows, S.O., Costa, B., Williams, K.M., Bornmann, J., & Overton, M. (2012). *An assessment of the ability of the U.S. Department of Defense and the Services to measure and track language and culture training and capabilities among general purpose forces* (TR-1192-OSD). Santa Monica, CA: The RAND Corporation.
- Dockery, M. J. (2003). *Lost in translation: Vietnam: A combat advisor's story*. New York, NY: Presidio Press.
- Ducote, B. M. (2010). *Challenging the application of PMESII-PT in a complex environment*. Leavenworth, KS: U.S. Army Command and General Staff College.
- Fiedler, F. E., Mitchell, T., & Triandis, H. C. (1971). The culture assimilator: An approach to cross-cultural training. *Journal of Applied Psychology*, 55, 95–102.
- Hilburn, M. (2007, October). Combat Hunter: Experimental Marine Corps project aims to turn the hunted into the hunter. *Seapower*, 60–62.
- Johnson, J. L., & Berrett, M. T. (2011). Cultural topography: A new research tool for intelligence analysis. *Studies in Intelligence*, 55, 1–22.
- Johnson, W. L., Friedland, L., Schrider, P. J., Valente, A., & Sheridan, S. (2011, May). The Virtual Cultural Awareness Trainer (VCAT): Joint Knowledge Online's (JKO's) solution to the individual operational culture and language training gap. In *Proceedings of ITEC 2011*. London, UK: Clarion Events.
- Johnson, W. L., Friedland, L., Watson, A., & Surface, E. (2012). The art and science of developing intercultural competence. In P. J. Durlach & A. M. Lesgold (Eds.), *Adaptive technologies for training and education* (pp. 261–268). New York, NY: Cambridge University Press.
- Johnson, W. L. (2013, March). *Simulation-based training and assessment: From the military to virtual schools*. Presented at the Virginia Board of Education Virtual Schools Work Session. Richmond, VA. Retrieved from [http://www.doe.virginia.gov/boe/meetings/2013/work\\_session/03\\_mar/work\\_session\\_brief\\_alelo.pdf](http://www.doe.virginia.gov/boe/meetings/2013/work_session/03_mar/work_session_brief_alelo.pdf)
- Laughrey, J. C. (2008). *Know before you go: Improving Army officer sociocultural knowledge*. Carlisle Barracks, PA: U.S. Army War College. Retrieved from <http://www.au.af.mil/au/awc/awcgate/army/knowb4yougo.pdf>
- Mateo, J. C., Behymer, K. J., & McCloskey, M. J. (2013, October). *Enhancing operational cross-cultural observation skills: An empirical evaluation of CultureGear*. Presented at the Human Factors Ergonomics Society 57<sup>th</sup> Annual Meeting, San Diego, CA.
- McCloskey, M. J., Behymer, K. J., & Mateo, J. C. (2012). *CultureGear: Training cross-cultural perspective taking skills* (Final Technical Report). Arlington, VA: Office of Naval Research.
- McFate, M. (2005). The military utility of understanding adversary culture. *Joint Force Quarterly*, 38, 42–48.
- Office of Naval Research (2013). *Combat Hunter CBT fact sheet*. Retrieved from <http://www.navair.navy.mil/nawctsd/Programs/Files/No.4-ONR-Combat-Hunter-Final.pdf>
- Phillips, J., McDermott, P. L., Thordsen, M., McCloskey, M., & Klein, G. (1998). *Cognitive requirements for small unit leaders in military operations in urban terrain* (Research Report 1728). Alexandria, VA: Army Research Institute for the Behavioral and Social Sciences.
- Sagae, A., Ho, E., & Hobbs, J. R. (2012, July). Efficient cross-cultural models for communicative agents. In *Proceedings of the 2<sup>nd</sup> International Conference in Cross-Cultural Decision Making: Focus 2012* (pp. 2319–2328). San Francisco, CA.
- Salmoni, B. A., & Holmes-Eber, P. (2008). *Operational culture for the Warfighter: Principles and applications*. Quantico, VA: Marine Corps University Press.
- Schatz, S., & Nicholson, D. (2012, July). Perceptual training for cross-cultural decision making. In *Proceedings of the 4<sup>th</sup> International Conference on Applied Human Factors and Ergonomics* (pp. 754–763). San Francisco, CA.
- Schmorrow, D. (2011). *Sociocultural behavior research and engineering in the Department of Defense context*. Washington, DC: Office of the Secretary of Defense, Assistant Secretary of Defense for Research and Engineering, Human Performance, Training, and BioSystems Directorate.
- Shirts, R. G. (2013). *History of BaFa' BaFa': A cross cultural/diversity/inclusion simulation*. Retrieved from <http://www.stsintl.com/business/articles/History-of-BaFa-2.pdf>
- UNAIDS (2013). *United Nations AIDS website*. Retrieved from <http://UNAIDS.org>