The 2010 CASL research portfolio included exciting new projects and the culmination of longer term studies, resulting in several key scientific findings in the areas of language, culture, and cognition. This year’s highlights contain only a sample of CASL’s over 25 projects with clients across the Intelligence Community (IC) and Department of Defense (DoD).

CASL conducts research to improve operational performance with better knowledge, resources, and technologies—advancing workforce readiness for routine and surge operations.
Introducing the Afghan Language Aptitude Battery (ALAB)

Because the key to successful coalition warfare is communication, the English language ability of Afghan forces is vital for successful training at the Defense Language Institute English Language Center (DLIELC) in San Antonio and for successful subsequent training. CASL is working with NATO and the DLIELC to aid the warfighter in Afghanistan. NATO asked CASL researchers to improve their preliminary test for selecting Afghan nationals for certain military assignments requiring English communication.

The ALAB will draw on CASL’s research on the Armed Services Vocational Aptitude Battery (ASVAB) and the Defense Language Aptitude Battery (DLAB). It will incorporate updated measures of cognitive abilities and new measures of personality traits, motivation, and aptitude for predicting success in foreign language learning.

The ALAB will complement checks for native language literacy and similar strategies to predict which Afghan students are most likely to successfully complete DLIELC English classes. CASL scientists developed and delivered a preliminary test to Afghanistan in a matter of months. The goal of this endeavor is to develop a culturally unbiased, validated, and measurable language aptitude test for English.

“The goal is to develop a culturally unbiased, validated, and measurable language aptitude test for English.”

IDENTIFYING FUTURE LANGUAGE EXPERTS

CASL’s research results have shown that the Defense Language Aptitude Battery 2 (DLAB 2) doubles the predictive power of previous selection methods (i.e., the Armed Services Vocational Aptitude Battery and the original DLAB). With this new version, the military will more precisely determine the aptitude of recruits to learn and succeed in foreign languages, thus improving the selection and assignment process.
CASL to offer scientifically validated brain training to foreign language professionals

In 2010, CASL researchers demonstrated that working memory processes are trainable and, most critically, that enhanced working memory capacity will lead to improved mental performance. Through experiments in intensive brain training, CASL has found that language professionals can improve their attention, memory, and language abilities. Using these groundbreaking findings, CASL will release several pilot brain-training courses in 2011 that language professionals can access online to begin improving their working memory capacity.

Mental performance improves with persistent working memory training

CASL will provide web access to these online brain-training modules in 2011.

WHAT IS WORKING MEMORY?

It is the mental workspace used for real-time integration of information for short spans of time. This small workspace stores and manipulates information for ongoing use. Working memory supports problem solving and intelligent behavior, action planning, and language abilities such as reading, comprehending spoken language, and drawing inferences.

Verbal creativity can be increased with a neurobiofeedback regimen

Course aims to improve analyst problem solving

Although some individuals have a greater innate ability than others to solve problems more creatively, a recent CASL finding suggests that verbal creativity (also known as divergent thinking) can be increased using neurobiofeedback. CASL’s noninvasive study strongly suggests that those participants who were able to self-regulate and increase their right-brain alpha waves with electroencephalography (EEG)-based neurobiofeedback could overcome mental impasses while solving very difficult verbal problems. The implications for the Intelligence Community are huge; CASL will launch a pilot divergent thinking course in 2011.

“Language professionals can improve their attention, memory, and language abilities.”
CASL’s Did You Mean…? tool helps language professionals search for Arabic words that they may mishear, misspell, or mistype. Similar in style to Google’s “Did you mean” feature, CASL’s Did You Mean…? (DYM) tool is a spelling or typo corrector for Arabic word searches. Google’s feature speeds topic search because of preprogrammed technology that can recognize the mistakes that native English speakers make in English. But what happens if you are a native English speaker searching for a word in another language? No DYM-style technology existed that could catch the mistakes made by this unique set of users. Through rigorous research into scientific methods and technologies, along with in-depth interviews with language experts, CASL designed DYM Iraqi to help with words that nonnative speakers might mishear, misspell, or mistype. DYM is now fully integrated into the tools that many government language professionals use every day.

Did You Mean…?

Enter an Arabic word below to verify whether it is in the Georgetown University Iraqi Arabic lexicon.

[CASL's Did You Mean…? tool helps language professionals search for Arabic words that they may mishear, misspell, or mistype.]

Building grammars from the ground up

Modern language analysis requires electronic, searchable, foreign language reference guides. Most existing Pashto grammars are 50–150 years old. They are inconsistent and miss crucial grammatical information. Moving these crucial types of references to an electronic format can improve the quality of analysts’ foreign language processing and comprehension, specifically for underresourced languages. Because resources in Pashto are so sparse, CASL’s grammar, slated for release in 2011, is highly anticipated by language analysts and academics alike.

“CASL’s Pashto grammar is highly anticipated by language analysts and academics alike.”
**Enhanced teaching and technology increase proficiency**

The Defense Language Institute Foreign Language Center (DLIFLC) continues to integrate new technologies into its learning environment, specifically technology use for distance learning outside of the classroom, with the goal of increasing its students’ language proficiency to Interagency Language Roundtable (ILR) level 2+. To facilitate this process, CASL has identified best practices and specific technologies relevant for enhancing foreign language learning and teaching, which DLIFLC has made actionable. CASL continues to synchronize with DLIFLC to refine curriculum studies and incorporate research on listening comprehension.

**First meta-analysis of its kind for the DoD**

Academic anthropologists, the DoD, and the military branches all treat cross-cultural competence (3C) as a change in ways of thinking about, interacting with, and behaving toward other groups. 3C is part of the DoD’s concept of the “mission of cognition,” which places training focus on improved interaction and the thinking behind it on par with physical and technical training. In addition, CASL uncovered similarities and differences between the social constructs of 3C and diversity. CASL worked closely with the DoD in 2010 to investigate the factors that lead to effective 3C training in the business world to determine how it parallels and could enhance the military’s programs. CASL’s study was the first meta-analysis of culture training conducted for the military. That analysis provided the military with clear outlines for how to optimize cultural and diversity knowledge. In addition, CASL identified, analyzed, and summarized nearly 200 published and unpublished studies to determine the effectiveness of 3C training and education.

**3C STUDY FINDINGS**

CASL’s research found that there are similarities and important differences between 3C and diversity. These organizational factors impacted the effectiveness of 3C training:

- Mandatory versus voluntary training
- Didactic versus experiential training
- Content of training
- Number of training sessions

The individual characteristics of the trainees, such as attitude, were also found to correlate with the effectiveness of the training program.
What makes a high-level language professional tick?
CASL performed in-depth interviews with high-level language professionals (language analysts, diplomats, and interpreters) to determine successes of their learning strategies and commonalities. Based on the Interagency Language Roundtable (ILR) skill level descriptions, a high-level language professional has reached at least level 4. The research showed that along with a strong motivation to succeed, these professionals also were willing to invest the time to use the language as much as possible, whether in a total immersion experience, formal language education, practice with native speakers, or reading on and off the job. These qualitative factors can help language professionals move from proficiency levels 2 and 2+ to 3 and above. Level 3 is the minimum operational proficiency level required for analytic language work. Read more by accessing CASL's white paper The Making of a Cryptologic Analyst at www.casl.umd.edu.

Factors that help analysts move from proficiency levels 2 and 2+ to 3 and above.

CASL research underpins IC language policy
CASL helps define a “good summary”
In June, the Intelligence Community’s Foreign Language Executive Committee (FLEXCOM)—Senior Executive Service intelligence professionals who give strategic direction and integrate foreign language issues in IC policy—approved standard definitions of types of language products. The list of definitions was based on pivotal CASL research from its Summary Translation and Language Product Evaluation Tools. The FLEXCOM-approved list defines a “good summary.” This definition is based on extensive interviews with front-line professionals and is used for conducting quality control, standardizing assessment, and providing meaningful feedback to the professional, at both the junior and senior levels.

“The list of definitions was based on pivotal CASL research.”
CIA and CASL team up to call for a national commitment to language proficiency

**Officials urge renewed focus on language mastery**

On December 8, 2010, CASL and the CIA brought together senior representatives from across the government to highlight the importance of diverse, high-level, foreign language learning. Similar to the 2004 National Language Conference, the Foreign Language Summit was hosted by Director of the CIA Leon Panetta and included remarks by Secretary of Education Arne Duncan, Undersecretary of Defense Dr. Clifford Stanley, U.S. Department of State Undersecretary of Management Patrick F. Kennedy, University of Maryland President Dr. Wallace Loh, and various members of Congress. Topics of discussion included the role foreign language plays in the accomplishment of government missions and the critical function that individuals highly skilled in foreign languages fill in today’s global environment; best practices for training the global workforce with the high-level language proficiency required to ensure U.S. security; and technology and its use in language learning. The positive response and forward momentum from this event have been overwhelming. CASL is compiling the results into a comprehensive white paper, which will be released in 2011.

From left: CASL Deputy Executive Director Amy Weinberg, Central Intelligence Agency Director Leon E. Panetta, U.S. Representative Rush Holt of New Jersey, U.S. Secretary of Education Arne Duncan, Under Secretary of State for Management Patrick Kennedy, Under Secretary of Defense for Personnel and Readiness Clifford Stanley.

**ROUND TABLE ON AFRICAN LANGUAGES AND CULTURES PAVES THE WAY FOR AFRICOM LANGUAGE STRATEGY**

In June 2010, CASL worked closely with the Department of Defense’s Language Office to host a roundtable discussion on African languages and culture. The group discussed complexities and challenges that the African cultural environment and language present for operations and training of the United States Africa Command (AFRICOM), which was declared a fully unified command in 2008. Concluding remarks and recommendations included prioritizing language and cross-cultural training, building partnerships with civil society organizations, and engaging with African countries in an empowering way.
The University of Maryland Center for Advanced Study of Language (CASL) conducts unprecedented, academically rigorous research in language and cognition that supports national security. Our research is interdisciplinary and collaborative, bringing together people from the government, academia, and the private sector. Our research is both strategic and tactical, so that it not only advances areas of knowledge, but also directly serves the critical needs of the nation.

STRATEGIC GOALS

- Leverage experts from academia, government, and industry in the United States and around the world.
- Conduct research to meet strategic as well as near-term operational problems.
- Situate research in the operational environment.
- Support the transition of research results into operational environments and assess impact.

FAST FACTS

- Founded in 2003 at the University of Maryland
- One of 14 University-Affiliated Research Centers (UARCs)
- 85 technical reports published in first 5 years
- 6 high-tech laboratories
- 154 full-time employees
- 81 total CASL researchers
- 28 affiliate faculty (University of Maryland faculty who hold an academic appointment with CASL)
- 55 adjunct faculty (Non-University of Maryland faculty who hold an academic appointment with CASL)