



University of Connecticut

Language and Cognition

UConn

An Area of Concentration within the Division of Experimental Psychology

The program takes a coherent, theory-based approach to the study of language and other cognitive processes. One focus of the program is on the aspects of language that make it a uniquely versatile vehicle for communication and thought. There is thus a strong emphasis on the dynamical aspects of language, including comprehension, production, and learning at the phoneme, morpheme, word, and sentence level, with a concern for both spoken and written language. Another focus of the program is on the cognitive processes involved in learning, memory, and music cognition, including in particular the relation between these processes and those involved in language use. Research on these topics combines experimental studies with computational modeling using both connectionist networks and symbolic computational models, and mathematical analysis using dynamical systems theory and statistics. There is particular interest in an ecological approach, which emphasizes continual interaction between individuals and their environments. There is much interest in the biological basis of language and cognition, both in pursuit of innate endowment questions and in studies of neural mechanisms using state-of-the-art neuroimaging tools. The Program has close ties to the Center for the Ecological Study of Perception and Action (CESPA), the Developmental and Behavioral Neuroscience Divisions in the Department of Psychology, the Linguistics Department, and the Cognitive Science Focus at the University of Connecticut. In addition, Haskins Laboratories, an internationally renowned interdisciplinary research facility located nearby in New Haven, provides a stimulating environment for research and training.

The Program prepares students for careers in research and teaching. A student's research activity begins immediately on entry to the program. In addition, three courses are typically taken each semester (see offerings on the back of this brochure). A student's schedule also includes attendance at colloquia and informal weekly group meetings for discussion of problems in theory and research. Course work for the Ph.D. degree is typically completed in two-and-a-half to three years. Another year or two is needed to complete the dissertation. Student support is a combination of teaching and research assistantships as well as fellowships; the beginning yearly rate is \$15,000, accompanied by a tuition waiver and health benefits. Applicants should have an excellent academic record. Research experience is helpful but not necessary. Applicants may have an undergraduate major in psychology, linguistics, computer science, mathematics, cognitive science, or other related fields of study. Application forms and course listings may be obtained from the Graduate School's website (www.grad.uconn.edu).

THE FACULTY

ROGER CHAFFIN, Professor of Psychology. The long-term goal of Dr. Chaffin's research is to understand how knowledge is stored in memory. After working for many years on memory for words and sentences, he now focuses on memory in musical performance: how the organization of memory is shaped by musical structure and the physical constraints of the instrument. His detailed case studies of highly skilled performers have pioneered new methods of investigation that he uses to explore how the psychological characteristics of the memory and motor systems shape musical interpretation.

CAROL FOWLER, Professor of Psychology. Dr. Fowler works on speech perception and production within the developing direct-realist framework. In addition, she has begun collaborative research on cross-person coordination and cooperation in language use. This is part of an effort to develop an ecological theory of language—that is, an understanding of how language is used in ordinary contexts in which speech occurs. Dr. Fowler is the Director of Haskins Laboratories.

LEONARD KATZ, Professor of Psychology. Dr. Katz studies reading, focussing on the process of printed word recognition. Cross-language experiments are often used to reveal in which ways word recognition is shaped by a language's particular characteristics and in which ways it is more general. Languages studied include English, Hebrew, Russian, Serbo-Croatian and Turkish. In addition, functional Magnetic Resonance Imaging studies (carried out in conjunction with Haskins Laboratories and Yale Medical School) explore the brain mechanisms that support the word recognition process.

JAMES MAGNUSON, Assistant Professor of Psychology. Dr. Magnuson is interested in spoken language understanding, with an emphasis on how language is used and perceived in natural contexts. By tracking eye movements as subjects follow spoken instructions to perform visually-guided tasks, Dr. Magnuson is developing computational models of the temporal dynamics of language processing and learning. His other interests include categorization and object and scene perception.

JAY RUECKL, Associate Professor of Psychology. A primary goal of Dr. Rueckl's research is to understand the processes underlying visual word identification. His research combines experimental techniques and simulations of connectionist networks to investigate the interaction of phonological, morphological, and semantic factors in reading, as well as the relationship between word recognition and implicit memory. In addition, together with his colleagues at Haskins Laboratories, Dr. Rueckl uses neuroimaging techniques to explore the biological basis of these processes.

WHITNEY TABOR, Associate Professor of Psychology. Dr. Tabor's research focuses on the coexistence of structure and flexibility in complex systems. He uses artificial neural networks and dynamical systems theory to develop models of human language processing, learning, and change. He has worked on the role of semantic information in sentence processing, evidence for ungrammatical influences in sentence processing, attractor models of syntactic category structure, the learning of complex phrase structure grammars, and the evolution of grammatical categories over historical time.

AFFILIATED FACULTY

Claudia Carello, Professor of Psychology, Director of CESPA: Printed word recognition in English, Korean, Serbo-Croatian; relation between reading fluency and motor coordination

James Dixon: Associate Professor of Psychology: **Cognitive development; learning and mechanisms of developmental change**

Inge-Marie Eigsti: Assistant Professor of Psychology: Brain development in autism; language acquisition in atypical populations

Elena Levy, Associate Professor of Psychology (Stamford): Language and gesture, language development

Diane Lillo-Martin, Professor of Linguistics and Psychology: The structure of American Sign Language, its acquisition and processing, and the processes deaf people use to read

Georgije Lukatela, Visiting Professor: The phonological basis of printed word recognition

Letitia Naigles, Associate Professor of Psychology: Language acquisition, word learning

Kenneth Pugh, Associate Professor, Yale University and Haskins Laboratories: Brain imaging studies of reading

Donald Shankweiler, Professor of Psychology (Emeritus): Reading and writing, working memory, individual differences.

William Snyder, Associate Professor of Linguistics: Crosslinguistic studies of language acquisition; sentence processing

Michael Turvey, Professor of Psychology: The phonological basis of printed word recognition

REPRESENTATIVE RESEARCH AREAS

The Biological Basis of Language
Connectionist Modeling
Cross-Language Comparisons of Word Recognition
The Ecological Approach to Language
Music Performance
Language and Memory
Learning and Language Acquisition
Morphology
Neuroimaging
Nonlinear Dynamics and Self-Organizing Systems
Reading Deficits
The Reading Process
Relation between Reading and Coordination
Sentence Processing
Speech Perception
Speech Production
Syntax and Sentence Processing
Visual Word Identification

COURSES

Acquisition of Syntax
Cognition
Cognitive Neuroscience
Computational & Ecological Approaches to Perception
Connectionist Networks
Control and Coordination of Movement
Development of Language
Dynamics of Language
Ecology of Language
The Lexicon
Memory
Neuropsychology of Language
Nonlinear Dynamics and Movement Control, I and II
Phonology
Psychology of Language
Psychology of Music
Reading Acquisition and Disorders
Sentence Processing

FACILITIES

The Language & Cognition Program is housed in the Bousfield Psychology Building. The computer environment of DEC, Macintosh, and Pentium machines is upgraded regularly. (The University's mainframe is accessed by ethernet from every computer and the Psychology Department has a computer systems manager with two full-time assistants to address software, hardware, and network problems.) Software packages include sound manipulation and analysis, along with standard statistical, word processing, and graphics programs. Equipment and software for audio-video editing, audio and video presentation of stimuli, and response collection (vocal, button-press, eye movement, MIDI keyboard) are available on site. A new Music Psychology Lab is under construction at the Greater Hartford campus. Facilities for articulatory synthesis, magnetometry, and functional Magnetic Resonance Imaging (fMRI) are available in New Haven in cooperation with Haskins Laboratories and Yale.

WEB SITES

Language & Cognition: web.uconn.edu/langcog
Psychology Department: web.uconn.edu/psychology

Haskins Laboratories: www.haskins.yale.edu
Graduate School: www.grad.uconn.edu

REPRESENTATIVE PUBLICATIONS

The following includes some classic overviews that illustrate our programmatic approach along with recent experimental papers.

- Braze, D., Shankweiler, D., Ni, W., & Palumbo, L. (2002). Readers' eye movements distinguish anomalies of form and content. *Journal of Psycholinguistic Research*, 31, 25-44.
- Carello, C., LeVasseur, V., M., & Schmidt, R. C. (2002). Movement sequencing and phonological fluency in (putatively) nonimpaired readers. *Psychological Science*, 13, 376-380.
- Chaffin, R., & Imreh, G. (2002). Practicing perfection: Piano performance as expert memory. *Psychological Science*, 13.
- Chaffin, R., Morris, R.K., & Seely, R.E. (2001). Learning new word meanings from context: A study of eye movements. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 27, 225-235.
- Fowler, C. A. (1991). Auditory perception is not special: We see the world, we feel the world, we hear the world. *Journal of the Acoustical Society of America*, 89, 2910-2915.
- Fowler, C. A. (1995). Speech production. In J. Miller & P. Eimas (Eds.), *Handbook of perception and cognition: Speech, language, and communication* (pp. 29-61). New York: Academic Press.
- Frost, R., & Katz, L. (1992). *Orthography, phonology, morphology, and meaning*. Amsterdam: Elsevier
- Katz, L., & Frost, S. (2001). Phonology constrains the internal orthographic representation. *Reading and Writing: An Interdisciplinary Journal*, 14, 297-332.
- Lukatela, G., & Turvey, M. T. (1998). Reading in two alphabets. *American Psychologist*, 53, 1057-1072.
- Magnuson, J. S., McMurray, B., Tanenhaus, M. K., & Aslin, R. N. (2003). Lexical effects on compensation for coarticulation: A tale of two systems? *Cognitive Science*, 27, 795-799.
- Magnuson, J. S., Tanenhaus, M. K., Aslin, R. N., & Dahan, D. (2003). The time course of spoken word learning and recognition: Studies with artificial lexicons. *Journal of Experimental Psychology: General*, 132, 202-227
- Raveh, M., & Rueckl, J. G. (2000). Equivalent effects of inflected and derived primes: Long-term morphological priming in fragment completion and lexical decision. *Journal of Language and Memory*, 42, 103-119.
- Rueckl, J. G. (2002). A connectionist perspective on repetition priming. In J.S. Bowers & C. Marsolek, (Eds.), *Rethinking Implicit Memory*. Oxford University Press.
- Sandak, R., Mencl, W.E., Frost, S.J., Rueckl, J.G., Katz, L., Moore, D., Mason, S.A., Fulbright, R.K., and Constable, R.T., (2004). The Neurobiology of Adaptive Learning in Reading: A Contrast of Different Training Conditions. *Cognitive, Affective, and Behavioral Neuroscience*, 4, 67-88.
- Tabor, W., Galantucci, B., & Richardson, D. (2004). Effects of Merely Local Syntactic Coherence on Sentence Processing. *Journal of Memory and Language* 50(4), 355-370.
- Tabor, W. & Hutchins, S. (2004). Evidence for Self-Organized Sentence Processing: Digging In Effects. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 30, 431-450.