This research explores how listeners map the properties of sound onto the lexicon (the mental dictionary) and investigates the neural basis of such processing. A series of experiments with both normal subjects and aphasic patients are discussed exploring the effects of phonological and acoustic-phonetic structure on lexical processing. Specifically, we investigated the extent to which phonological and acoustic-phonetic modifications of an auditorily presented prime stimulus affect the magnitude of semantic priming to a real word target in a lexical decision task. Results from normal subjects suggest that:

- activation of the lexicon is graded,
- both phonological and acoustic-phonetic structure influence lexical activation,
- the prototypicality of an exemplar member of a phonetic category influences the degree of lexical activation, and
- acoustic-phonetic structure activates not only its lexical representation and lexical network but also the lexical representation and lexical-semantic network of its competitors.

Results from aphasic patients suggest that they have deficits in the dynamics of lexical activation. Broca's aphasics appear to have an overall reduction in lexical activation, whereas Wernicke's aphasics appear to have an increase in lexical activation or a failure to inhibit lexical candidates. The potential neural systems underlying lexical activation will be considered based on recent neuroimaging findings with normal subjects.

For information please call the Cognitive Science Office at (716) 645-3794 or check http://wings.buffalo.edu/cogsci/html/2002spring.htm