TITLE: Assessing the Effect of AEDs on Linguistic Behavior

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Since patients with epilepsy are, by the very nature of their disorder, prone to cognitive impairment, even mild adverse drug effects on essential functions such as speech and language can be especially disruptive to daily life. A number of antiepileptic drugs (AEDs) have been reported to negatively affect speech and language. For example, topiramate is associated with a unique cognitive signature affecting language use in a subset of patients who often describe their impairment as a "word finding difficulty" that is often severe enough to result in discontinuation of therapy. Unfortunately, the mechanisms by which AEDs, such as topiramate, affect cognition and linguistic behavior have not been well established, hampering our ability to predict which individuals are at risk for developing significant impairments and for developing clear clinical guidelines for the therapeutic management of cognitive side effects.

Currently, studies designed to investigate AED-induced effects on cognition, as reflected by modifications in language patterns, rely primarily on commonly used neuropsychological measures of word finding such as confrontation naming (Boston Naming Test) or generative verbal fluency (COWA) that correlate poorly with subjective patient reports of word finding difficulty (Heller & Dobbs 1993; Rohrer et al 2008) and do not adequately assess or reflect the fluency of spontaneous speech produced in everyday activities. Our group has developed a novel system for automated language and speech analysis (SALSA) that allows for an objective assessment of subjectively reported language and speech-related complaints that result from AED administration. Using SALSA we studied the effects of a single, 100 mg oral dose of topiramate on the cognitive performance of healthy volunteers in two double-blind, randomized, placebo-controlled, crossover studies.