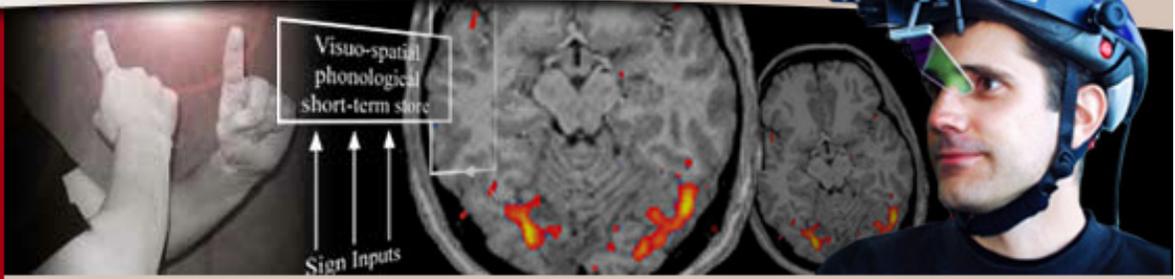




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"The name for this is on the tip of my tongue!"

## Finding the right word is hard for Codas

Bilinguals tend to have more difficulty finding the word they want to say and have many more "tip of the tongue" experiences than people who speak only one language. Some people suggest that bilinguals have more difficulty retrieving words because their sounds of one of their languages interfere with the sounds of their other language. Codas help us determine whether this hypothesis is true because sign language does not have any sounds to interfere with spoken language. We found that codas who were bilingual in ASL and English had many more "tip of the tongue" experiences than monolingual English speakers, and they had the same number of "tip of the tongue" experiences as Spanish-English bilinguals. This finding rules out the possibility that the sounds interfere with word retrieval. Instead, we hypothesize that

bilinguals have more tip of the tongue experiences because they divide their language use between two different languages, speaking one language half as often as a monolingual.

Pyers, J.E., Gollan, T.H., Emmorey, K. (2009). Bimodal bilinguals reveal the source of tip-of-the-tongue states. *Cognition*, 112, 323-239.

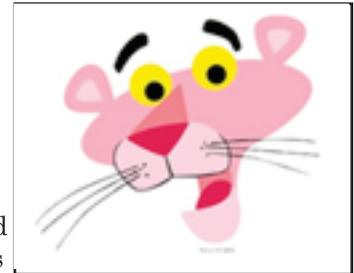
## The bimodal bilingual brain Codas have an ASL face



Codas (known to scientists as "bimodal bilinguals") have unique brains. Codas exhibit patterns of neural activation during language processing that are unique, differing from both monolingual English speakers and from deaf ASL signers. For example, deaf signers use almost all of their "auditory" cortex when comprehending ASL, while codas use only the more posterior (secondary) auditory cortex, perhaps because they need to separate auditory speech processing from sign language processing. The study of bimodal bilingualism is providing novel insights into the brain structures that support language.

Emmorey, K., & McCullough, S. (2009). The bimodal brain: Effects of sign language experience. *Brain and Language*, 110(2), 208-21.

New research is showing that codas sometimes use ASL facial grammar when speaking to non-signers. In ASL, conditional sentences (e.g., If I go to the store, . . . ) are accompanied by raised eyebrows, and wh-questions (e.g., when are you going?)



are accompanied by furrowed eyebrows. Pyers and Emmorey (2008) found that when codas say conditional sentences in English, they will raise their eyebrows, and when they ask wh-questions, they will furrow their eyebrows. Crucially, the timing of the eyebrow movements that accompanied English sentences looked the same as the timing of eyebrow movements that accompanied ASL sentences. This finding suggest that a coda's two languages are simultaneously "on-call" and available for production. And complete inhibition of one language during the production of the other is quite difficult.

Pyers, J.E. & Emmorey, K. (2008). The face of bimodal bilingualism: Grammatical markers in American Sign Language are produced when bilinguals speak to English monolinguals. *Psychological Science*, 19(1), 531-536.

## THANK YOU

The above and other ongoing studies in our lab address key questions about bilingualism, language processing, and human cognition. None of these studies could happen without the contributions of Codas like yourselves. We would like to take the opportunity to thank each of you who have generously given your time to help us address these issues.

If you are interested in participating in our studies or would like to know more about our research, please contact **Jennie Pyers** at this conference, or email **Karen Emmorey** at [kemmorey@projects.sdsu.edu](mailto:kemmorey@projects.sdsu.edu).