Help for Chang Mei Li - **an overview of English DNA in action** 1

Chang Mei Li has a problem

Chang Mei Li is 18 and lives in Beijing. She is one of 2 billion people around the world trying to learn English. In an increasingly globalised world, knowing English has become an economic necessity. Her parents are about to spend the equivalent of $NZ 30,000 or more to send her to Britain for a 1 year University course. Like many other Chinese parents, they are also paying for extra English classes outside school hours.

But how well will Mei Li cope with English when she hits London? Recent studies suggest that foreign students like Mei Li are actually not very well prepared for their university studies abroad - especially in terms of the size of their English vocabulary. After 8 years of English classes in China, Mei Li knows fewer than 2,000 words. In comparison, British teenagers entering university know upwards of 60,000 English words. The gap is huge.

Mei Li needs to know, *as a minimum*, 5,000 to 10,000 words to cope with her academic study in the UK so she can read her university textbooks.

Mei Li has got a really big problem...

What's behind Mei Li's difficulty?

Research shows that a 4 or 5 year old kid is able to learn a new word in his own language from a *single exposure* to it. The scientific term for this sort of instantaneous word learning is called "fast mapping".

A foreigner, trying to learn English, just can't do this.

Here's an example: If "flibberjockiness" was a new English word, you could easily learn it (and possibly remember it for the rest of your life) after hearing it just once. However, you are likely to have some difficulty remembering a very ordinary Russian word like "zdravosmisljashchij" even for a few seconds let alone a lifetime! The word just means "sensible" - no problem for a 5yr old Russian kid...

What makes"foreign"words so hard to learn?

By the time you were about 9 months old, you would have been exposed to well over 4 million spoken English words - mainly from your parents. While it's unlikely that you would have understood them, your brain managed to extract a complete set of the *underlying sound patterns* of the English language from them and built a small patch of neural tissue in the left hemisphere of your brain to represent these uniquely English patterns. That patch is just above your left ear.

This tissue can easily process the complex sequence of sounds in words like "flibberjockiness" - despite the fact that each component of such words is only heard for a few milliseconds. Our brains have learned that the transient sounds of English words always turn up with the same, reliable, statistically predictable patterns we extracted from the speech we heard when we were babies.

If you wanted to quickly learn and instantly recognise thousands of words like “zdravosmisljashchij”, you’d have to build a parallel patch of neural connections in your brain which represents the unique sound patterns of Russian. Without these basic building blocks of Russian already programmed into your brain the task of acquiring the language will be slow and difficult.

By the age of 18, and after 8 years learning English at school, Mei Li has probably had the same exposure to English as a 9 month old baby living in England. But the school system is such that Mei Li’s exposure to the language is always very fragmentary and lacking in intensity. The brain tissue she needs to process the sound patterns underlying English just never gets developed properly.

While Mei Li is a normal and healthy 18yr old Chinese speaker, the part of her brain she uses to process ***English*** resembles that of an elderly person who’s had a cerebral stroke and has lost some of their language ability. Functionally, that part of her brain displays the same characteristics we can see in learning impaired (dyslexic) children. These kids often have difficulty detecting and identifying short duration sounds in close proximity to each other in normal speech. Words often sound garbled and mixed up and learning new ones can be very hard. When she hears English, this is just what it is like for Mei Li too.

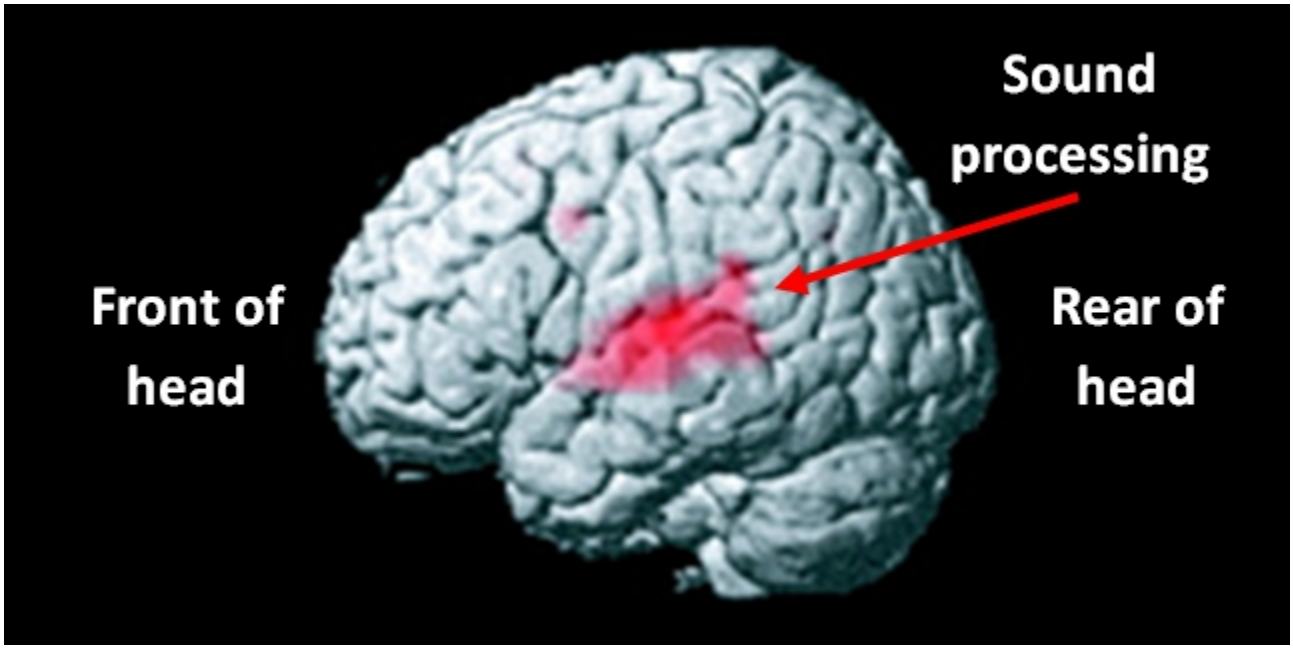

Figure1: Approximate area of the left superior temporal sulcus responsible for phonological processing targeted by English DNA training.

The part of Mei Li's brain responsible for handling English is dysfunctional and underdeveloped. It lacks the neural connections which can work fast enough to process English at a sufficient speed to "fast map" the new words she's going to hear when she attends her first lectures in London. New words can sound like a muffled blur to her – and are lost before she can catch them and learn them.

How can we help Mei Li?

For English, Mei Li is lacking the sort of experience she had as a baby when she acquired the sound patterns of her native Chinese. To help her build this critical neural tissue for English, we need to artificially replicate the experience she missed as a baby.

Recent research in brain plasticity shows that we can use the same cutting-edge technologies now being used to help stroke victims recover lost language function[1] and language-learning impaired children overcome neurological deficits and attain normal language ability[2]. These technologies build neural tissue which supports language processing and will help Mei Li "fast map" new English words as she encounters them – in just the same way she built her native Chinese vocabulary as a kid.

English DNA

English DNA is cutting-edge technology developed from recent, original PhD research at Victoria University in Wellington, New Zealand. The technology is in line with the most recent developments in brain

sciences and psycholinguistics. In 6 to 8 weeks, any student of English can build the missing neural tissue that native speakers of English developed in their earliest years – the very “DNA” on which English is built.

The training involves daily, intensive, computer controlled exposure to the underlying sound patterns of the English language. The software repetitively trains the foreign learner’s brain to process incoming English sounds at progressively faster speeds (measured in milliseconds) until they are able to recognise the patterns at the same speed as native speakers. The software is highly interactive, responding to each learner’s individual rate of progress, and constantly adjusting delivery and difficulty of the material. The net result? The ability to learn lots of new English words really quickly.

Building neural tissue to represent the fundamental building blocks of a language in the brain of a stroke victim, a kid with a language-learning impairment or a teenager trying to acquire English as a second language, requires intensive, massed practice over a regular, sustained period. To maintain the necessary motivation to persist, English DNA is presented using a motivational reward/feedback system to ensure that the experience is both fun and intense.

Key points:

- The technology promises to be disruptive in a massive global industry by reducing the training time required to attain competence in acquiring English as a second language;
- English DNA is based on original (unpublished) PhD research conducted at VUW Wellington;

- The technology offers significant value to ***all*** foreign learners of English – irrespective of their level of competence.

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Compatibility: Requires iOS 9.0 or later. Compatible with iPhone, iPad, and iPod touch.

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