This week we'll discuss activities for **improving language processing**.

First, processing of some sort is happening all the time: your brain is processing when you simply listen for meaning, and it's processing when you pick out a key word from a sentence you otherwise don't understand, or notice a single new word in a sentence you otherwise understand fully. We use "processing" to mean something different here--the ability to link the forms (parts of words, whole words, phrases, and sentences) to the meaning rapidly, accurately, and ultimately with limited conscious effort (such as translation), as you do when you listen in your native language. Specifically, we are looking for listening activities that increase speed, improve accuracy, and build capacity. Let's look at each one of these individually.

Increasing speed is important because 1) it allows you to comprehend faster speech and 2) it frees cognitive resources from having to concentrate so hard on the language *forms* that the meaning is hard to grasp, interpret, and retain. Speed of phonological processing means that when you hear a string of English sounds you can rapidly link it to a word or phrase, find the boundaries, and reconstruct reduced forms. Speed of lexical access means how quickly you can get the meaning when hearing a word. Speed of parsing means how fast you can create the grammatical structure of a sentence, recognizing which words go together in phrases and picking up on relations like tense. Finally, an important part of speed is *anticipation*—the ability to predict the next word or phrase based on what you've already heard and the context.

Processing for accuracy means catching all of what the speaker said and possibly even what the speaker didn't seem to say but what grammatically must be there. This includes correct word forms (e.g. present vs. presence), endings (lift vs. lifts), grammatical words (articles, prepositions, and conjunctions), word order, word boundaries, full versions of reduced forms. It also means using meaning and context to select the most likely words from alternatives (e.g. "tire" vs. "tie are" vs. "tie our" in "tie our present to the distant past"). Accuracy can also involve getting relatively accurate forms for unknown words so that they can be identified correctly.

Capacity refers to how much language you can hold in working memory. This is important both for comprehending longer sentences and for dealing with some of the accuracy issues mentioned previously. Building capacity doesn't really refer to increasing memory so that you can recall a larger number of items (the general target for humans is 7 +/- 2 (a range of 5 to 9 unrelated items)). It really refers to "chunking"—assembling items into larger units and then remembering the units. For example, a random 10-digit phone number would probably be hard to recall on just

one hearing, while 650-725-1557 might be much easier because "650" is a known area code and "725" is a common Stanford prefix. You can do the same thing with words and phrases, and it appears that this ability can improve with practice.

Done correctly, dictation can be used to improve processing in all of these areas. Dictation typically works best with relatively easy, familiar material, though it can also sometimes be a way to focus attention on more challenging material. Other aspects of processing practice are to work with material that has challenging accents or that is faster than you can easily handle. In both cases, listening while simultaneously reading a script at least one time through can be helpful for seeing what's actually there. Similarly, the play speed control on media players may allow you to slow a segment down so that you buy more processing time and more difficult parts become easier to notice.