COGS 153/253 Ben Bergen

HW4: A new research question

Assigned: February 2, 2011 Due: February 11, 2011

The goal of this assignment is to help you develop a research question that may be the one you use in your project proposal, which is due at the end of the quarter. In working on this assignment, please feel free to consult your classmates, or anyone else for that matter. But everyone should have their own distinct research question. Please double-space all work and use a font size no smaller than 12. The homework is due at the beginning of class on the due date.

Your job for this assignment is to develop a new research question. The research question should have the following properties:

- a. The question should be interesting. (This can mean different things; maybe it distinguishes between two theories, or maybe it's important to understanding something else, or maybe it's important because it would help with some applied problem.)
- b. The question has to be answerable. (That is, there has to be a way to collect data that will give you an answer.)
- c. We shouldn't already know the answer. (If we did, there would be no reason for you to do more research on it. This doesn't mean you have to read absolutely everything on your topic if there's a lot of work on it, but you should make a good faith effort to see whether there's already work that answers your question.).

To develop a new research question, you'll need to start with a general topic related to language comprehension that you're globally interested in. A good way to come up with a topic is to think about which of the things we've talked about in class you found most interesting, and then work from there. This is usually the easiest way to go. But you could also start from things that you've noticed about comprehension, and develop a question from there.

The next thing to do is to start looking at other work that's relevant to your question. There has been a lot of research on a language comprehension, and you'd be surprised what has already been done. To make sure that you're not replicating other people's work, and to also figure out how your research question relates to our current state of knowledge, you'll need to review the literature. Often a good way to come up with a novel question is to tweak something that someone has already done; asking a question that's closely related to one that has already been asked.

If you're starting from scratch, this can be hard, but a good way to go is to find a paper that addresses a related issue, and look at what other papers that paper cites, look at what other papers cite that paper, and look at what other work the relevant authors have done. An invaluable tool for this is Google Scholar (http://scholar.google.com/). Make it your friend.

Once you think you have a decent question, one that's important, answerable, and novel, then you can start writing up the following, which is what you'll turn in:

1. Statement of research question (this can be quite short, just a sentence or a short paragraph). E.g.:

Do people have to work harder to process less frequent words? (We already know the answer to this question, but for the purpose of this example, let's pretend that we don't. I don't want to use up all the good, novel questions!)

2. Argument for the importance of the research question (this can be based on any of the types of reason listed above in a). E.g.:

Some theories of language comprehension (e.g. the SRN model) claim that people make predictions about what words will come next, and word frequency is a major factor used in learning and making these predictions on this account. Seeing whether word frequency affects the ease with which people process words will test this prediction of this class of models.

3. Argument that the question is answerable (the best such argument will be a <u>very</u> brief description of how you would go about answering it) E.g.:

This question can be answered through the use of ERPs, where we present words that have different frequencies (but are similar along other dimensions, like part of speech and length) and look to see whether the N400 is attenuated with the higher-frequency words.

4. Brief summaries of <u>three</u> related research or survey articles. These articles can be from scientific journals or they can be chapters in scientific books. At most one of them can be an article that was assigned for class. Your three summaries should state briefly what the article tells us about the research question you're interested in. E.g.:

Kutas, M. and Schmitt, B.M. Language in microvolts, In: Banich, M.T. and Mack, M. (Ed). Mind, brain, and language: Multidisciplinary perspectives, Lawrence Erlbaum Associates: NJ, 2003, pp.171-209.

In this survey article, Kutas and Schmitt survey the main known ERP components related to language comprehension. Among these, the most relevant for word frequency is the N400, which is larger the more surprising or hard to process a word is. While the article says that earlier components can be affected by word frequency, it doesn't say whether or not the N400 can be. (It actually does, but we're pretending it doesn't. You can include a bit more detail if you want, but you don't have to. Also, remember that you need to summarize three articles.)

5. Summary of the current state of knowledge, based on the reading summaries and other readings you've done. E.g.

The current state of knowledge in the field is the following. We know that the N400 is modulated by the difficulty people have processing words (Kutas & Schmitt, 2003), and we know that less frequent words are harder to process (Just & Carpenter, 1980). But we don't know whether the N400 can be modulated by frequency. This prediction of the SRN model (Elman, 2004) appears not to have been tested because we're pretending it hasn't been (or there's some methodological reason, or there's simply a gap in the literature, etc.).

You should be able to do all of this in 500 words or fewer.