Contextual Effects on the Incremental Processing of Function Words
University Scholars Research Progress Report
Isabel Gwara
Dr. Delphine Dahan
Work conducted May 2015 – September 2015
Institute for Research in Cognitive Science at the University of Pennsylvania
September 15, 2015
What strategies do listeners use to predict upcoming information during linguistic communication? The goal of our experiment was to understand how contextual effects such as speech rate influence the incorporation of semantic information into a listener’s interpretation of language. That is, how does the way information is conveyed affect how people understand that information? Our research question is important in exploring and ultimately defining the language comprehension mechanism.

Our experiment tested whether listeners could use information from perceptually shortened or lengthened prepositions to predict upcoming linguistic input. A preposition that presupposes a container (“in”) and a preposition that does not (“on”) were manipulated through a well-documented speech rate effect so as to seem shorter or longer to a listener while remaining the same absolute length. Participants, in an eyetracker, listened to these manipulated prepositions within their sentential contexts and revealed their predictions by either looking at a container object or not.

We predicated that an “in” perceived to be longer-than-usual would lead to more looks at a container object compared to an “in” of perceived normal length, indicating that context influences our interpretation of language. Here, even though “in” is only perceptually (not actually) longer, we hypothesized that it would still convey more information than a normal-length “in”. The opposite should be the case for a perceptually shorter “in”. We would find no effect if the perceived length of “in” had no relationship with looks to a container object.

The results of the experiment did not support our hypothesis. We found that a lengthened perceived “in” did not increase looks to a container object, as we had expected. Conversely, we also found that a perceptually shorter “in” did increase looks to a container object.

These results led us to reevaluate our ideas and ultimately postulate that there could be a threshold-like bound for the amount of information a preposition can contribute. When the preposition “in” was very short, it didn’t carry enough information to immediately disambiguate between a container and a noncontainer. However, even when a preposition was of longer-than-normal perceived length, it could not contribute more information to an interpretation than a normal-length preposition.

Discussion and statistical analysis are ongoing. It is difficult to make any conclusions regarding the language comprehension mechanism at this stage. We plan to investigate the possibility of an information threshold in further experiments.