Lab 4: Phonetics of toddler speech

Overview. Children acquiring their native languages will often infer phonemes and phonological processes that aren't actually attested in the target language. Usually, these inferences affect whole classes of segments. For example, a child may exhibit devoicing on all word-final segments, they may substitute [w] for all glides, or they may reduce all consonant clusters to just one, whichever has the most constricted articulation. These 'errors' tend to show similar patterns across children at the same developmental stage, but they vary according to degree of acquisition. That is, children in the latest stages of acquisition exhibit adult-like sound systems, whereas children in the earliest stages exhibit the least adult-like speech. Yet, at all stages, a child's phonology is systematic and rule governed.

Task. Retrieve the set of files found in the folder in Blackboard under Lab 4. These are recordings of a 2 $\frac{1}{2}$ year-old native speaker of English.

Examine the recordings and state the general principles that appear to be affecting the toddler's speech. For example, if /m,n,ŋ/ in adult speech surface as b,d,g at the beginning of words in the toddler's speech, state that nasals become stops at the beginning of words. Likewise, if the toddler has acquired, for example, positive VOT and aspiration for word initial /p,t,k, state that the child has fully acquired native production of voiceless stops. For each observation, provide evidence for your claim. For example, if you observe that /l/ is consistently produced as /r/, examine the acoustic characteristics and confirm that F3 for the child's /l/ is low, as would be expected of an /r/. Account for as many classes of segments as possible: stops, nasals, fricatives, glides, and vowels. Also account for consonant voicing, syllable structure, and anything else you observe. Be specific in your observations. Refer to areas of the relevant spectrograph in support of your hypothesis. The facts of the matter are not nearly as important as showing that you can cite a line of evidence in favor or against a particular hypothesis.

Transcription of the files are included in the file names. Two long files have the following transcriptions: (1) *Once upon a time there was a little boy with blonde hair and blue eyes. That little boy's name was Alex. One night that little boy wanted to go to the playground with the cars in there.* (2) *I make, I was, I, I wanna, I was making.., I wanna make cookies. Do you see my oven mitt? I will go, I go to my kitchen, go to ?? go to ?? kitchen, go to that kitchen, you want to make... kitchen.*

Write up report.

Title: Lab 4: Phonetics of toddler speech, by Len Washington III

Topic. Clearly state the topic that you are investigating. An example would be, "This lab addresses the way adults talk to pets versus infants."

Issue. A description of the issue at stake. An issue is the problem that you are attempting to solve. An example would be, "The special register of infant-directed speech is sometimes claimed to be intended to clearly contrary speech characteristics to language-learning infants, yet speech to prts would appear to share this same special register, and there is no suggestion that adults talk to pets in this way to help them learn language. At issue is whether pet- and infant-directed speech are, in fact, identical." You only need to cite relevant information from our lectures, from the textbook, or from the lab instructions itself to motivate your issue, but however you decide to state the issue, be clear to draw out what is at state in addressing it.

Hypothesis. A statement of the research questions and hypotheses under investigation. A hypothesis is a tentative explanation for an (anticipated) observation of data. An example would be, "Data were analyzed to address the issue of pet- vs. infant-directed speech. I predict that if speech directed to infants is intended to be clear, then such speech would have, among other properties, an expanded vowel space because xxx. In contrast, if pet-directed speech is diminutive and not intended for language-learning purposes, then such speech would be characterized as being merely loud speech and not show any expanded vowel space because yyy." This particular hypothesis requires quite a bit of knowledge of phonetics, which you will not possess at the beginning of the semester. You should state a hypothesis as strongly as your knowledge of phonetics and speech characteristics allow. Don't go out on a limb and guess at things if you are uncertain.

Method. A description of the method. An example would be, "In the lab activity, I recorded x people saying y words to z pets, and then assume x people saying the same words to z infants. Then, I made the following measurements: x, y, and z." Be specific. Explain what equipment you used, or how data were obtained. Define any measurements. An example would be, "Loud speech was defined as any speech with an average intensity of xxx, and expanded vowel space was defined as cases where [acoustic measures] showed yyy."

Results. A description of the results. An example would be, "Results indicated vowel space for pet-directed speech exhibited louder, longer segments, but not a bigger vowel space, consistent with the prediction that such speech is merely loud and not meant to help discriminate among speech sounds. In contrast, infant-directed speech *did* exhibit an expanded vowel space, which I take as evidence as supporting the hypothesis that the special register to infants is for language learning purposes and is acoustically distinct from pet-directed speech." Provide relevant tables, figures of (minimally) descriptive statistics where relevant.

Discussion. A critical analysis of your study. An example would be, "While the study revealed a difference in pet- versus infant-directed speech, it does have some drawbacks.

First, I didn't discuss whether infant-directed speech is actually effective in helping infants to discriminate among speech sounds. Moreover, vowel-space isn't necessarily a strong indicator of an attempt to teach an infant to discriminate among speech sounds in the first place. Rather, an equally plausible explanation could be that adults xxx."