Take home Assignment answer key:

The following is a basic answer key for the take home assignment (handed in on April 17th). Points could be deducted if you misused terminology more than once, if you didn't clearly explain critical processes, if your answer showed evidence that you did not completely understand the process or hypothesis in question (for example, if you referred to experimenter's hypotheses or explaination of the data as undoubtable facts), or if you were simply unclear throughout (you weren't necessarily penalized for grammar, but you may have lost points if you provided accurate facts but I simply didn't understand your overall thesis). If you feel that your answers covered all of the points listed below but you didn't get a perfect score on some question (that is, 20/20) then points were most likely deducted for one or more of the reasons listed above.

if you scored 55 or more then you did very well and probably only need a quick review
if you scored 40 – 55 then you may want to review the first sets of lecture in detail
if you scored below less than 40 then we strongly suggest you come see us so we can help clarify those concepts for you.

1. There was a mix up at the hospital, and 2 newborns have been switched at birth. The babies look very similar, and neither has any distinguishing visual characteristics. Even their mothers can't tell them apart. Knowing what you know about infant speech perception, how could you re-unite each baby with its mother?

- Experiments have shown that neonates (and even fetuses after having developed the appropriate sensors) can distinguish the voice of their mothers from the voice of a strange woman.
- You could either use the unaltered voice of the two mothers or their voice altered to mimic the inter-uterine voice for a test. The second option may yield better results.
- The best technique to use is the high-amplitude sucking technique (head turn won't work on infants so young)
- However, it is not necessarily clear how the child will react differently to the mother and the strange voice (it is possible that sucking rate would increase with the exposure of the strange voice simply because it is a new stimulus or that it would increase with the exposure of the mother's voice because of a familiarity preference). Therefore, you would need to use a more careful method such as including a third unrelated female voice as a control.

2. Explain why the perceptual assimilation model predict that a phonemic contrast between the Zulu dental and alveolar lateral clicks will be easy for a native English-speaking adult to distinguish, whereas the phonemic contrast between Hindi retroflex /T/ and dental /t/ will be difficult for a native English-speaking adult to distinguish?

- The perceptual assimilation model proposes that a non-native phonemic contrast can be harder to perceive if both of those phonemes can be mapped to[1] a single phoneme in your native language. However, if either of those phonemes can be mapped to two different phonemes in your native language or are not mapped to any phonemes in your language, then you can more easily tell the two phonemes apart.
- The hindi retroflex and dental voiceless stops seem to be perceived by English speakers as an alveolar voiceless stop /t/. Therefore, by the perceptual assimilation model, these two sounds

1 that is, if both phonemes sound like

should be difficult (but not necessarily impossible) to distinguish by those English speakers.

- Neither the dental or alveolar lateral zulu clicks sound like any of the phonemes of English, thus they should be easier to distinguish for speakers of English. (It is important to note that whether or not clicks 'sound like language' at all is not necessarily relevant to the ability to distinguish them)

3. Explain the rhythmic class hypothesis. At what age could an English speaking infant distinguish French from Japanese? English from Dutch? What methods could you use to test the hypothesis?

- By the rhythmic class hypothesis we suspect that the rhythmic systems of a language (stress timed, syllable timed, and mora timed) is quickly perceived and learned by a neonate. Furthermore, that rhythmic differences between languages are perceivable and thus distinguishable.
- Because French and Japanese have different rhythmic systems from each other and from English, an infant as young as 2 months (possibly younger but not necessarily) can probably differentiate those languages from each other and from English.
- English and Dutch have very similar rhythmic patterns (as they are both stress timed languages) therefore an infant will have to have learned more detailed aspects of their native language (that is, English) in order to tell it apart from Dutch. This can occur as early as at 5 months of age.
- The best methods for testing this hypothesis is the high-amplitude sucking technique (using habituation), since any other technique (such as the head turn procedures) will be problematic for neonates even as old as 2 months. The conditioned head turn procedure might be usable for 5 month olds.