Psych156A/ Ling150
Winter 2009
Homework 1: Introduction to Language Acquisition & Sounds
Or "The Language Adventures of Sigmund von Hacklestein, part 1"

Remember to write your full name and University ID number on your assignment. If you collaborate with other students in the class, please make sure to indicate who you worked with.

(44 points total)

(1) Sigmund von Hacklestein has been trying to understand some of the complexities that are involved in his knowledge of language, and how that relates to prescriptive and descriptive rules of language use.

(a) Briefly explain to Sigmund the situation that each of the following sentences describes (that is, explain who seems to like whom in each case): [2 pts]
(i) Hoggle appeared to Sir Didymus to like himself.
(ii) Hoggle appeared to Sir Didymus to like him.

(b) Briefly describe to Sigmund the difference between prescriptive and descriptive rules. [4 pts]

(c) Is your ability to interpret the sentences above as you did likely the result of a prescriptive or descriptive rule? Explain to Sigmund why you think so. [2 pts]

(2) Sigmund remembers that we talked in class about a cash register carrying out the process of addition as an example that demonstrates Marr's hierarchy of explanation. However, he wants to make sure he really understands the different levels in Marr's hierarchy. Help Sigmund figure out the following problems.

(a) Suppose the process of addition was carried out by a very small, smart man inside the cash register, who does addition in his head. What level(s) would this be a change to? Make sure to explain why you think so. [4 pts]

(b) Suppose a cash register was created that carried out the process of multiplication between two numbers. For example, if given 4 and 5, it would produce 20. What level(s) would this be a change to, when compared to the original cash register? Make sure to explain why you think so. [4 pts]

(3) Below are some data from the language of Guin, which Sigmund has encountered by spending time with the Guin people. Sigmund hopes to use them to figure out which sounds are contrastive in Guin.

(i) "kern" = to yelp suddenly in the presence of a spider
(ii) "kerm" = to yelp suddenly in the presence of a spider

(iii) "klem" = to squash a spider

(iv) "kren" = to peek over one's fingers to look at a spider

(a) Are "m" and "n" contrastive sounds in Guin? Explain why you think so. [3 pts]

(b) Are "l" and "r" contrastive sounds in Guin? Explain why you think so. [3 pts]

(c) Sigmund later encountered some Guin speakers using the word "krem". Should he know exactly what "krem" means, given the data he has already? If so, what should it mean and why? If not, why can't Sigmund predict exactly what it means from the words he already knows? [3 pts]

(4) Consider the graphs below. The lefthand one shows subjects' responses to a task while the righthand one shows their reaction time. Help Sigmund figure out how to interpret these graphs by answering the questions below.
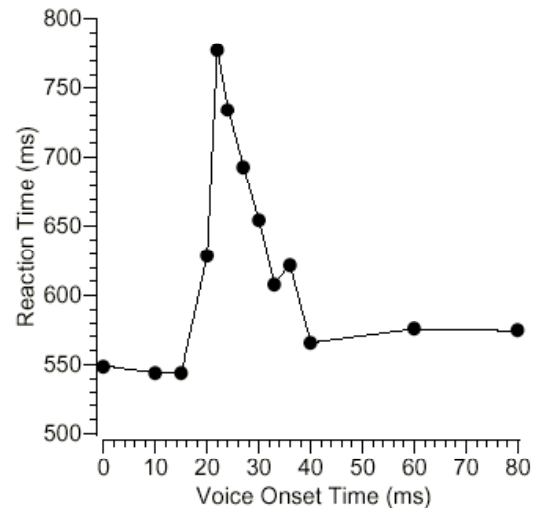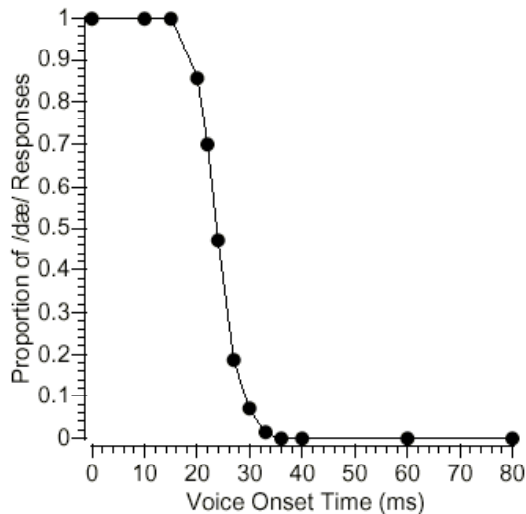

(a) Briefly describe what decision a subject must make for a discrimination task.
    [1 pt]

(b) Briefly describe what decision a subject must make for an identification task.
    [1 pt]

(c) Is the task the subjects were asked to perform a discrimination task or an identification task? Explain how you know. (Hint: Look at the x axis labels for both graphs, and the y axis label for the lefthand graph.) [2 pts]

(d) Why does reaction time rise sharply in the righthand graph? Your answer should make reference to both when the sharp rise occurs (when compared to the lefthand graph) and what it means for the subject to have the reaction time rise in this kind of task. [4 pts]

(5) Sigmund is trying to understand how the Maintenance and Loss Theory determines which category boundaries a child will maintain, based on the input data. Suppose a child encounters the data points below (represented by 'x's). Which category boundaries (if any) will be maintained? Explain why you think so. [3 pts]
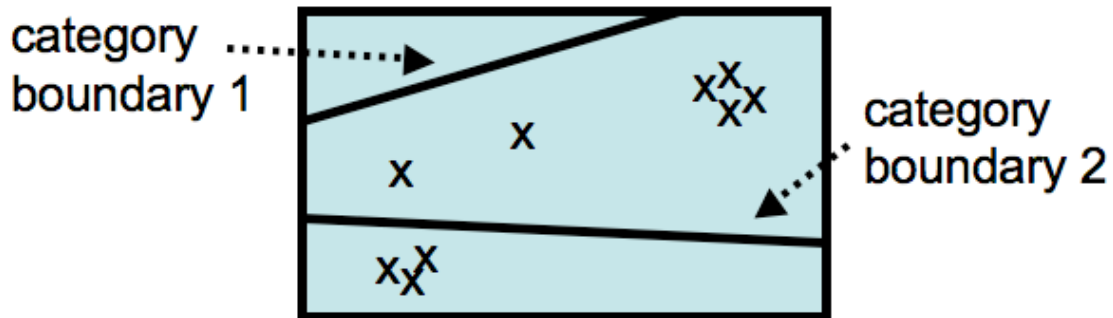
(6) One idea for why familiar words are more easily recognized is that they've been encountered multiple times (repetition). That is, the more words children know, they more words they have encountered and the more frequently they have encountered the words they know. While this is a nice story, Sigmund doesn't think it can explain the results in Werker et al. (2002). Is Sigmund right? Why or why not? You may find it helpful to think about what the Werker et al. (2002) task was. [4 pts]

(7) Sigmund recently encountered a very advanced 12-month-old whose vocabulary was greater than 200 words. What should Sigmund predict this infant's performance would be on the Stager-Werker word learning task? Why? Cite experimental evidence to support your answer, making sure to indicate why this evidence supports your answer. [4 pts]