

Discussion Questions for Language and the Brain

1. Here are three examples of aphasic patients attempting to describe “The Cookie Theft”. Examples (i) and (ii) come from a lecture on aphasia at <http://www.rachaelanne.co.uk/teaching/psych/>; example (iii) is from George A. Miller, *The Science of Words*, Scientific American Library Series.

- (i) *Well this is ... mother is away here working her work out o' here to get her better, but when she's looking, the two boys looking in the other part. One their small tile into here time here. She's working another time because she's getting to. So two boys work together and one is sneakin' around here, making his work an' his further funnas his time he had.*
- (ii) *Cookie jar ...fall over...chair...water...empty*
- (iii) *First of all this IS falling down, just about, and is gonna fall down and they're both getting something to eat . . . but the trouble is this is gonna let go and they're both gonna fall down . . . but already then . . . I can't see well enough but I believe that either she or wd have some food that's not good for you And she's to get some for her, too. . . and that you get it and you shouldn't get it there because they shouldn't go up there and get it unless you tell them that they could have it. And so this is falling down and for sure there's one they're going to have for food and, and didn't come out right, the uh, the stuff that's uh, good for, it's not good for you but it, but you love it, um mum mum (smack lips) . . . and that so they've . . . see that, I can't see whether it's in there or not.*

(a) What type of aphasia is represented in each example?

- (i) **Wernicke's aphasia**
- (ii) **Broca's aphasia**
- (iii) **Anomia**

(b) What are the characteristics of each type of aphasia that would distinguish it from a “normal” description of this picture?

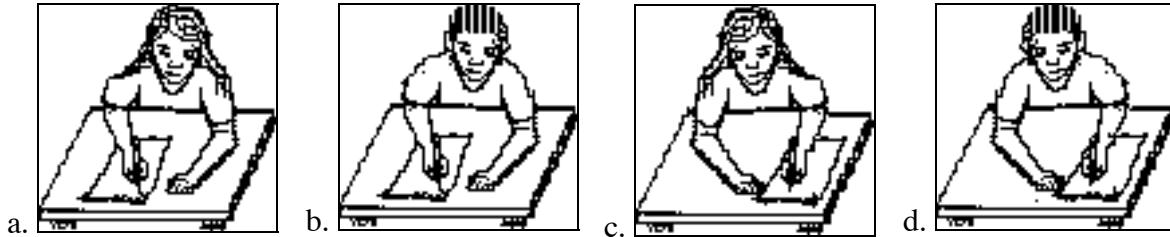
- (i) **Wernicke's**: Fluent speech with essentially intact grammatical structure, but only vaguely related to the events in the picture. The grammar generator seems to be working fine, but connecting it to the facts with words is a problem.
- (ii) **Broca's**: Essentially no grammatical structure, just a list of words with no morphology or function words connecting them. However, compared to both (i) and (iii), it is quite content-ful and descriptive. All the words are “substantives”, i.e. specific nouns, verbs or adjectives.
- (iii) **Anomia**: Fluent speech with essentially intact grammatical structure, and clearly relating to the events, but it seems “empty”. Compared to (ii), for example, the only content-ful word that the two utterances share is *fall over*.

(c) Examples (i) and (iii) are similar in certain respects. What distinguishes them, and, in particular, what seems to be missing in (iii)?

Both are fluent and grammatical, but (iii) seems much better keyed to attempting to describe the events in the picture. What is missing in (iii) is any “substantive” words, esp. nouns. In fact, the only noun in the passage is *food*, which itself is such a general

word that it is uninformative. Example (ii) has a different type of problem with nouns, typical of Wernicke’s aphasia, namely, inserting non-existent words in noun positions (*funnas*) or inserting irrelevant nouns (*tile*).

2. Which of the following people would be *least likely* to become aphasic due to trauma to the left side of the head?






Answer: "c", the left-handed female. Left-handers (more than right-handers) and females (more than males) seem to use the right brain for at least some analytic functions generally associated with left brain.

3. Below are some complex signs in American Sign Language with their translations in English. For each ASL sign and its English translation state whether the expression is

- root
- inflected word = (root + inflectional affix)
- derived word = (root + derivational affix)
- phrase (a combination of words formed by a rule like VP → V NP)

You can see videos of each of the signs on the Linguistics 1 site by following the “Discussion questions” link.

			<u>ASL</u>	<u>English</u>
a. eat	b. chocolate	c. morning	a. root	a. root
			b. root	b. root
			c. root	c. root
			<u>ASL</u>	<u>English</u>
d. eat chocolate	e. breakfast		d. phrase	d. phrase
			e. compound	e. compound (or root?)

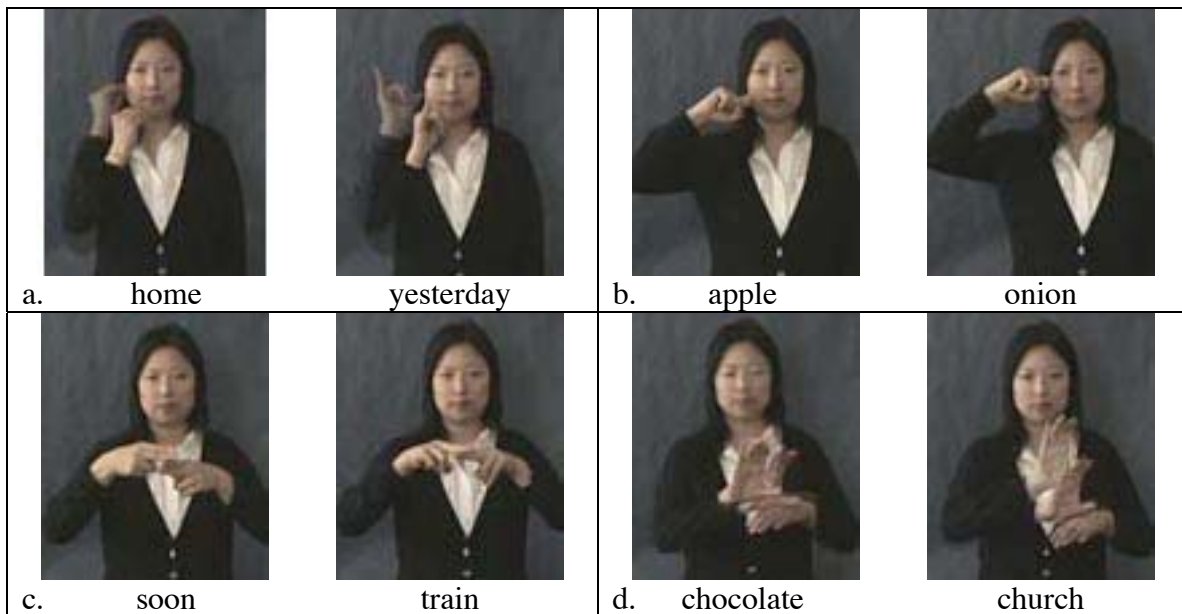
		<u>ASL</u> f. root g. derived word	<u>English</u> f. ('call') root ('give a name') phrase g. root
f. call, give a name to	g. name (of someone)		
		<u>ASL</u> h. root i. inflected word	<u>English</u> h. root i. phrase
h. look	i. look continuously		

COMMENTS:

- a-c. These are all clearly ROOTS in both languages, that is, they could not be broken down into smaller meaningful parts. The *-ing* of English 'morning' probably was originally a suffix, but no one would think of it that way now. The video of the ASL sign for 'morning' suggests that it might also mean 'sunrise', in which case it would be a COMPOUND, but there is actually another sign for 'sunrise, dawn'.
- d. Both the ASL and English simply combine the word for 'eat' followed by the word for 'chocolate', that is this is a PHRASE derivable from the VP → V NP rule.
- e. Both ASL and English seem to be COMPOUNDS. The ASL sign clearly does not mean 'eat the morning'. The ASL sign might be interpreted as 'eating in the morning', that is, V + PP or Adv, but since here it is used as a noun, the interpretation as a compound seems preferable. The English word is originally a compound, but some speakers of English might, today, not recognize the breakdown into two roots.
- f. The ASL sign means 'call' in the sense of 'we call her "Tabitha"' (there is a different sign for 'call' as in 'I called my friend'). English CALL is a root, though if the ASL sign were translated 'give a name', this English expression would be a PHRASE (VP → V NP). The ASL sign is probably best characterized as a ROOT (though see comments on (g) just below). The forward hand motion gives the sense of "present, give", but the sign for this meaning does not resemble the ASL sign for 'call, give a name'
- g. The English noun 'name' is a ROOT, unrelated to 'call' in the sense of (f). The ASL sign, on the other hand, is related to the sign 'call' by hand shape, palm orientation, and, for the most part, hand position. The relation is one of DERIVATION since 'call' is a verb and 'name' is a noun, that is, there is a category change, which is one characteristics of derivation. It is a little difficult to know which is derived from the other! Both share hand shape and palm orientation but differ by movement. However, a common derivational pattern for forming nouns from verbs in ASL is to double the sign of the verb. Hence, the noun 'name' is assumed to be derived from the verb.
- h. 'Look' is an undecomposable ROOT in both languages.

- i. In English, ‘look continuously’ is a phrase derived from the rule $VP \rightarrow V AdvP$. In ASL, however, ‘look continuously’ is based on ‘look’, with a repeated circular hand motion and a different facial expression. No additional signs are added. This is called an “aspectual” distinction (it presents a particular “aspect” to the looking). This type of modification is generally categorized as INFLECTIONAL in ASL studies. It does not change category (both (h) and (i) are verbs), and it is a modification that can be added to any verb, much like past or present tense endings can be added to any verb in English. Moreover, many spoken languages have verbal inflectional affixes showing aspectual distinctions such as this.

4. Here are some pairs of signs that illustrate *Duality of Patterning* in American Sign Language. You can see videos of the sign pairs under the “Discussion questions” link of the Linguistics 1 web site.



For each of the pairs of sign in a-e, what is the feature that distinguishes them?

- hand shape: ‘home’ is formed with a cupped hand and ‘yesterday’ in a circular shape with the little finger extended
- hand position: ‘apple’ is formed with the hand near the cheek and ‘onion’ near the temple
- palm orientation: ‘soon’ is formed with the palms toward the body, ‘train’ with the palms facing downward
- movement: ‘chocolate’ is formed with the top hand moving back and forth on the lower hand, ‘church’ with an up and down movement of the top hand

Why do pairs of signs like these demonstrate that ASL has *duality of patterning*?

Recall that *duality of patterning* refers to a property of a communication system whereby the system has a set of units that, in themselves have no meaning, but when combined in various combinations, they create the meaningful units of the language (words,

sentences). In spoken language, the set of inherently meaningless units is the set of sounds that the language uses ([t], [s], [i], [w], etc.). In ASL, the set of inherently meaningless units are those that are contrasted in a-d. For example, the cupped hand of 'home' could be used with, say, a downward palm orientation, positioning near the chest, a forward and back movement, and the like to give signs with different meanings (or no meanings at all!, just as English could combine [p], [o], [f] to create "pofe", which could be a word, but doesn't happen to be).