AphasiaBank: The Kansas Connection

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Background

- Aphasia is a language disorder following stroke
- Aphasia can range from mild to severe
- There are many types of aphasia
- Some people with aphasia have language deficits restricted to word-finding difficulties
- Others have good comprehension but little verbal expression
- People with global aphasia have great difficulty comprehending spoken and written language and also have little verbal expression

Problem

The relevant empirical facts regarding aphasic language use lie buried in individual video archives, obscured by complex coding systems for classification and diagnosis

Solution

- Create a secure **shared** database for researchers to answer questions about language and communication in people with aphasia
- Use a **common coding system** to capture information about aphasic language behavior

Purpose of the Current Project

- Contribute aphasic language samples to an aphasic language database (AphasiaBank) that is currently under construction
- Translate the AphasiaBank language assessment protocol into Mandarin

AphasiaBank

- AphasiaBank is a web-based shared database currently under construction for the study of language and communication in aphasia (www.talkbank.org)
- A common coding system is used to capture aphasic language behaviors
- AphasiaBank is supported by a grant from the NIH, and the PI is Brian MacWhinney at Carnegie Mellon University (CMU)

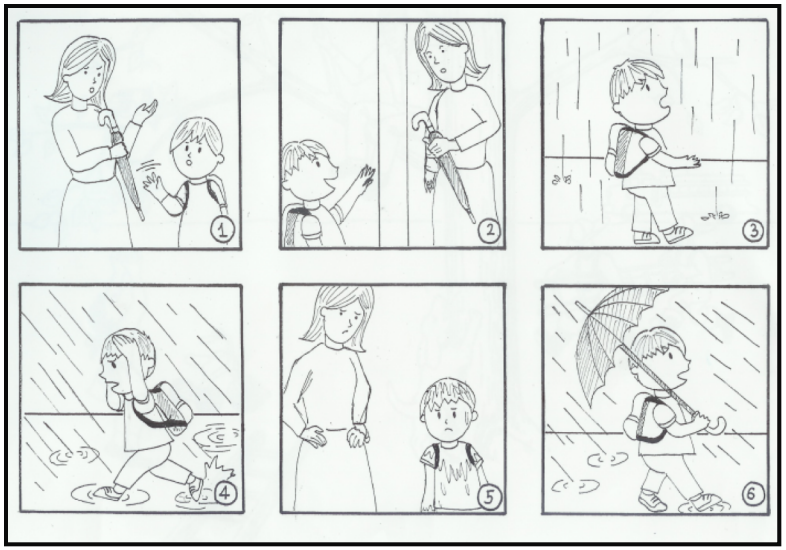
AphasiaBank Inclusion Criteria

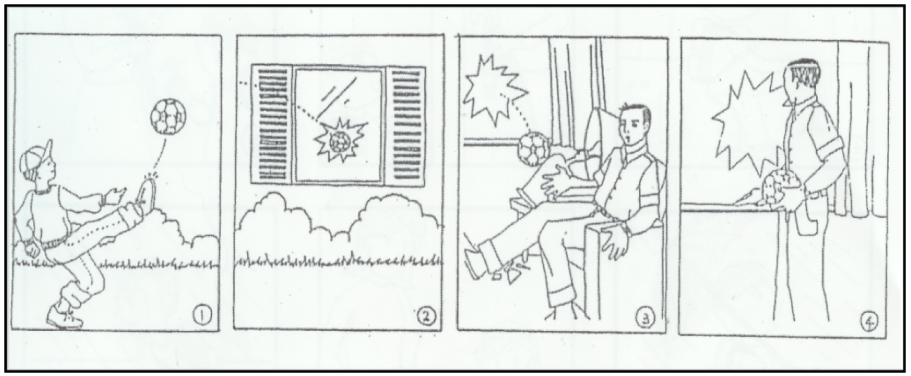
- Aphasia resulting from stroke that can be verified by neuroimaging
- Left hemisphere or bilateral brain damage
- Co-existing apraxia of speech and/or dysarthria are acceptable
- Excluded: progressive aphasia, TBI, dementia, right hemisphere brain damage

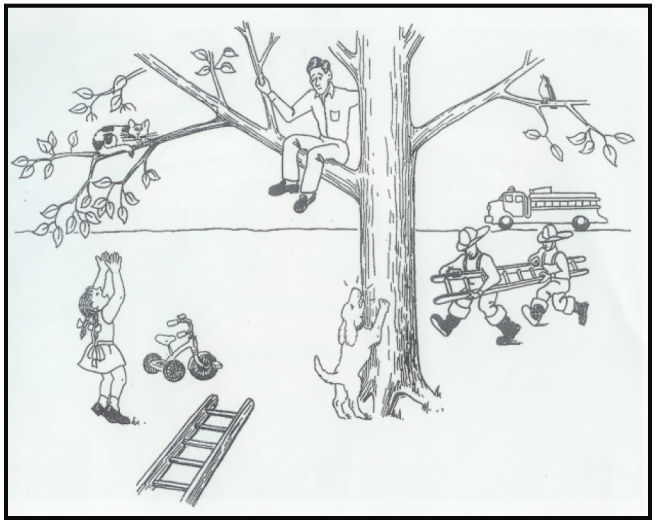
AphasiaBank Data Collection Protocol

- Free Speech Samples (~20 min)
  - Stroke Story and Coping
  - Important Event
- Picture Descriptions (~20 min)
  - Broken Window
  - Refused Umbrella
  - Cat Rescue

Picture Description Stimuli







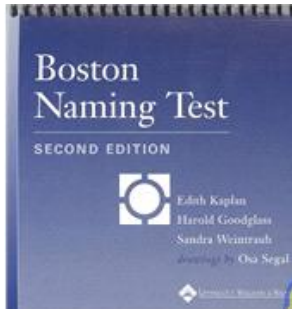
Data Collection Protocol cont'd

- Story Narrative
  - Cinderella (~10 min)

- Procedural Discourse
  - Peanut Butter and Jelly Sandwich (~5 min)

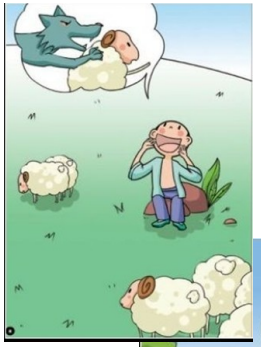
Data Collection Protocol cont'd

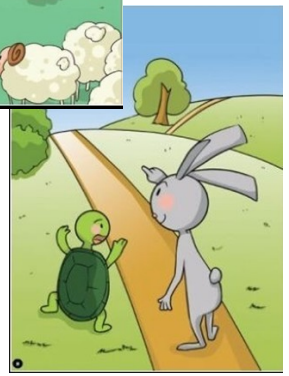
- Tests
  - AphasiaBank Repetition Test (~20 min)
  - Boston Naming Test – Short Form, Second Edition, (~15 min)
  - Verb Naming Test from the Northwestern Assessment of Verbs and Sentences-Revised (~10 min)
  - The Western Aphasia Battery-Revised (~45 min)



Mandarin Translation

- At KUMC, we have translated the AphasiaBank language assessment protocol into Mandarin. Subjects are asked to tell the “Cry Wolf” and the “Tortoise and Hare” story rather than the “Cinderella” story. They are asked how to make dumplings rather than how to make a peanut butter and jelly sandwich.





- <u>Phase I testing of Mandarin-speaking individuals</u>
  - Subject Inclusion Criteria: non-aphasic native speakers of Mandarin aged 50 years or older
  - Subjects are administered the translated protocol to test the validity of the Mandarin version of the protocol.
  - The Western Aphasia Battery is not administered

Video Recording

- The language testing is filmed with one digital video camera
- Subject and examiner sit at a 90 degree angle to one another so both faces are visible
- The video memory cards are sent to CMU to be digitized into resultant QuickTime movies and then placed in the password protected AphasiaBank database, which is accessible only to AphasiaBank consortium members
- A written transcription of the subject's utterances accompanies the video

Transcription

- Transcription takes place at CMU w/trained transcribers
- Over the last 20 years, programmers have built tools for analyzing communication at each of the major linguistic levels
- Each transcription is placed into a CLAN file so it can "talk" to the additional software:
  - CHAT: word level analysis, grammaticality, utterance level (e.g., circumlocution, perseveration)
  - CA: conversational analysis
  - MOR and POST: morphosyntax
  - ELAN: gestural analysis

Information in the AphasiaBank Database

- Videotaped language samples/testing
- Written transcriptions of language samples (including coding of aphasic language behaviors)
- Scores from standardized aphasia tests
- CT or MRI scans of the brain
- Type of aphasia
- Demographic information

Subjects Tested to Date

- Subjects with Aphasia Tested at KUMC
  - 18 total
  - 5 with Broca's aphasia, 3 with Wernicke's aphasia, 1 with Global aphasia, 5 with Anomic aphasia, 2 with Conduction aphasia, 1 with Transcortical Motor aphasia, and 1 who was classified as non-aphasic
- Mandarin-Speaking Subjects tested at KUMC
  - 3 total (all non-aphasic)
- Subjects in the AphasiaBank database
  - 157 subjects to date
  - 12 collection sites throughout the United States

Future Goals

- One goal is to extend the core database to include data from related disorders such as progressive aphasia, TBI, dementia, and cognitive communication disorders associated with right hemisphere brain damage
- Another goal is for AphasiaBank to include language samples from persons with aphasia who speak a language other than English. Currently, the AphasiaBank protocol has been translated into Cantonese and Mandarin, and work is underway to translate the protocol into French, German, Spanish, and Dutch.

Acknowledgements

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