Korean Agrammatic Production :

Testing The Tree-Pruning Hypothesis

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Abstract

The most salient and discussed features of speech production in agrammatic aphasia are the omission and substitution of grammatical morphemes. Cross-linguistic studies have shown that the pattern of omission/substitution is not random but occurs in a systematic and highly constrained way. Although these descriptions are important, they do not explain why all grammatical morphemes are not equally impaired.

Friedmann and Grodzinsky (1997) proposed the Tree-Pruning Hypothesis (TPH) to account for these patterns of sparing and loss. The TPH claims that in an agrammatic representation, an impaired functional node is underspecified, thus allowing inappropriate affixation to occur. Additionally, whenever a node is impaired, all nodes above it will also be impaired.

Using four types of narratives collected from two Korean agrammatic patients, We test the claim that the impairment in agrammatism is based on such hierarchical representation. It was found that these patients consistently produced appropriate grammatical morphemes that are higher in a syntactic tree than the impaired morphemes. The finding that an intact node exists higher than an impaired node refutes the TPH.

0.   Introduction

Neurolinguistics

- hopes to build a picture of how language is instantiated in the brain
- holds the promise of linking syntactic representation with neural representation

Linguistic Aphasia

- Aphasia is impairment of language caused by damage to a specific area of the brain
- The linguistic of study of aphasia offers a unique view of the properties of the language system

- Only that which is susceptible to breakdown
  in a system can break down, only in ways
  compatible with the constraints of the system

Objective

- To test predictions derived from the most current
- account for agrammatic patterns: the Tree Pruning
  Hypothesis (Friedmann and Grodzinsky 1997)

1. Background

Types of Aphasia

- Broca's (nonfluent)
- Wernicke's (fluent)
- Transcortical Motor (nonfluent)

Agrammatic Aphasia: Summary of findings in 14
languages(Menn and Obler 1990)

- Slow rate, short phrases, simplified syntax
- Omission of free grammatical morphemes
- Substitution of bound grammatical morphemes
- Overuse of clause-initial and -final elements
- Omission of modifiers
- Preservation of canonical word order

Summary of Findings in Korean (Halliwell 1998)

- Slow rates, short phrases, dysprosodic
- Simplified syntax
- Substitution of tense affixes
- Omission of 'particles'

- Omission of modifiers
- Intact lexical distribution
- No use of sentence-final discourse elements
- Content > function 'words'
- Canonical word order

2. Methods and Materials

Subjects

- 2 aphasic patients and 2 controls matched in age, education, job level, and sex
- Neurological status

|	*CYS*	*KKM*
Etiology	ischemic stroke	ischemic stroke
Onset date	March 1996	August 1989
	(27 pom)	*(105 pom)*
Aphasia	Broca's	TMA
Motor Deficit	severe	severe
Visual Deficit	corrected	corrected

3. Results

Sample

(8) *Jenhwa haesseyo...uh ani.um...tasi.um*
     ...patasse--patasseyo--haesseyo--patasseyo.
     um...kuli...um...jul--jul--talasseyo.kassta
     wasseyo ...tampae pi--haesse.tampae
     piu--pi--pi...tampae wasseyo...koyang
     --koyangi.yaku...
     senpungki...epsoyo emma--emma wasseyo.

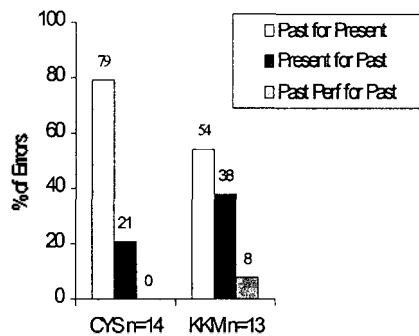   2 minutes 43 seconds

(9) (She) telephoned...uh no. Um...again.um...
received--received--did (it)—received(it).
um...an...um...string..string...hung.
(He) came...cigarette sm--did.cigarette
smo--sm--sm-- cigarette came... cat—
cat.baseball...fan...nothing mom—mom
came

Verbal Morpheme Errors
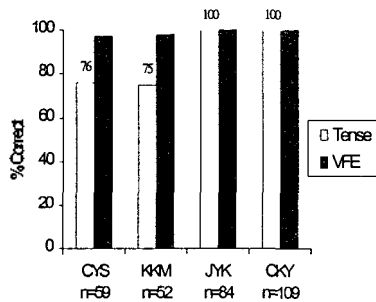
Direction of Tense Error

4. Implications

Syntactic Impairment

o Evidence for the notion that impairment is syntactic and not phonological or morphological

Tree-Pruning Hypothesis Inconsistent

o Korean subjects present intact node (C) higher than an impaired node (T).

• non-random substitution occurs

o relatively low rate of error

5. Conclusion

o The most current account for patterns in Korean agrammatism is insufficient.

o Preliminary results confirm basic properties of agrammatism similar across languages

o In addition to similarities, there are language specific differences

o Despite differences, the variation in breakdown is consistent and predictable.

Further Questions

o If patients are dysprosodic, how can declarative and interrogative be differentiated?

o Is the sample too small to generalize?

o As production inevitably involves processing, what are the constraints?

Selected References

Ahn, S. H (1990). *Korean quantification and universal grammar.* Doctoral dissertation, University of Connecticut.

Baker, M. (1988a). *Incorporation: A theory of grammatical function changing.* Chicago: University of Chicago Press.