Effects of Pitch Accents on Memory in Language Comprehension

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ABSTRACT
This study investigated whether prosodic stress has effects on memory in language comprehension. We manipulated the location of contrastive stress (or L+H* in ToBI) in recorded stories containing two contrast sets. Referents receiving contrastive stress were recognized better than those receiving presentational stress (or H*). Additionally, items receiving contrastive stress were recognized better than referents in filler stories without contrastive stress. However, those items in the critical stories that received presentational stress were remembered worse than when neither referent received contrastive stress. This suggests that stress and linguistic focus play an attentional role in speech; focus may improve memory for the focused referent but impair memory for the other referent.

PRIOR WORK & RATIONALE
Linguistic focus increases semantic specificity in encoding (Birch & Garnsey, 1995; Kamas et al., 1996; Sanford et al, 2006)

But:
➢ Most experiments have investigated reading only
➢ No examinations of later memory for this material

Present study:
➢ Examined effects of focus in spoken language
➢ Manipulated prosodic stress -- often used to indicate focus in speech (Ladd, 1996)
➢ Tested later memory

PRESENTATION PHASE & STIMULI
Auditory presentation of **50 stories**, each containing **two contrast sets**:

"The newspaper didn't have the resources to cover both the fire and the robbery, so the editor assigned the paper's best reporter and photographer to focus on one of the two stories. This turned out to be a good decision, because the _____'s work on the _____ story was later nominated   for an award."

Contrast Set 1:
"Reporter" or "Photographer"

Contrast Set 2:
"Fire" or "Robbery"
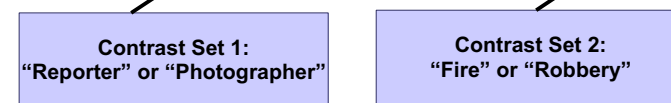
24 **critical** stories:
➢ One item receives **contrastive stress (L+H* in ToBI)**
➢ Other item receives **presentational stress (H* in ToBI)**

26 **filler** stories:
➢ Both items receive **presentational stress**

TEST PHASE
Visual presentation with **forced choice recognition test**:

The newspaper didn't have the resources to cover both the fire and the robbery, so the editor assigned the paper's best reporter and photographer to focus on one of the two stories. This turned out to be a good decision, because the ___(A)___'s work on the __(B)___ story was later nominated for an award.

(A) *REPORTER* or *PHOTOGRAPHER*?
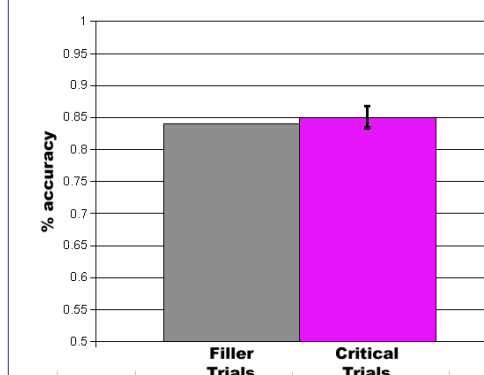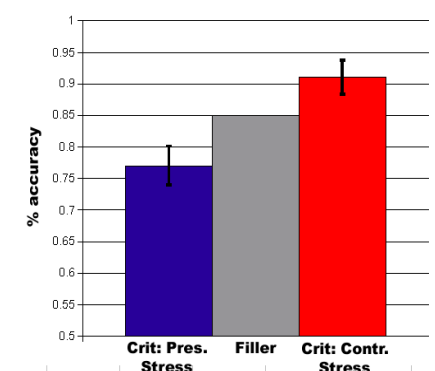
(B) *FIRE* or *ROBBERY*?

RESULTS
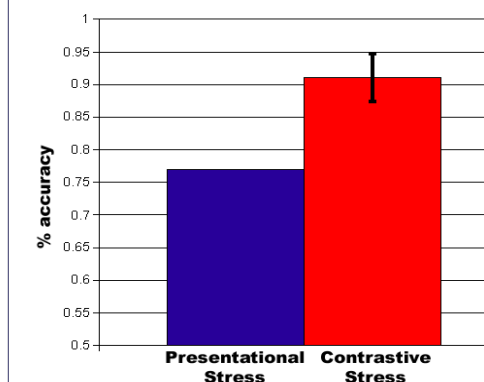
Referents with **contrastive stress** recognized **better** than items with **presentational stress**.

$F_1(1,23) = 14.75$ $p < .01$
$F_2(1,23) = 26.83$, $p < .001$

Compared to the **fillers**, in critical stories....
➢ Items with **contrastive stress** remembered **better**.
$t_1(13) = 3.77$, $p < .01$
➢ Items with **presentational stress** remembered **worse**!
$t_1(13) = -2.29$, $p < .05$

Overall performance **equivalent** between the **two story types**.
$t_1(13) = -0.45$, $p > .10$

CONCLUSION
Prosodic stress and linguistic focus may **direct attention** to part of a linguistic stimulus
➢ Facilitate semantic encoding and recognition for that referent
➢ Decrease memory for other referents

Contrastive Stress

Change in encoding

Superior memory