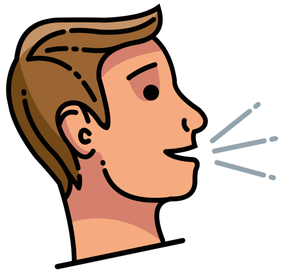

Lexical, Phrase, and Contrastive Stress: Similarities and Differences

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BACKGROUND

- Prosodic stress serves many functions:
  - It can be used to distinguish between lexical items
    - e.g., the verb "in**SERT**" and the noun "**IN**sert"
  - Different types of phrases
    - e.g., the noun "**greenhouse**" and the adjective-noun "**green house**"
  - Contrastively to respond to a previous utterance
    - e.g., "Do you want the pumpkin pie? No, I want the **APPLE** pie"
- Previous research has explored lexical, phrase and contrastive stress [1-3]
- However, little work has investigated the extent to which they are related to one another

METHODS

Participants: Sixty-eight native English-speaking undergraduate students (48 female, 20 male)

Procedure:

- Online Profiling Elements of Prosody in Speech Communication (O-PEPS-C), an online adaptation of the in-person clinical PEPS-C test (Peppé et al., 2003) includes tests of prosodic form and function
- Production accuracy was judged by 4 research assistants
  - Mean accuracy was used
- Tests assess comprehension and production of:
  - *form*
  - *affect* (like/dislike)
  - *question/declarative*
  - *phrase boundaries* (e.g., "chicken, fingers and fruit" vs. "chicken fingers and fruit")
  - 3 types of *stress subtasks:*

Lexical stress subtest: participants listen to and produce pairs of words that differ minimally in stress (see Fig.1).

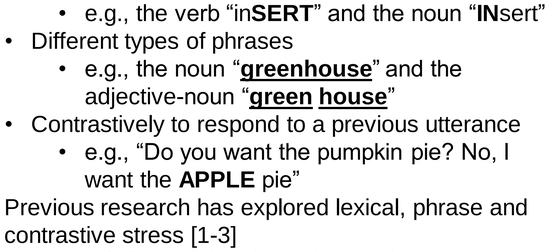

Figure 1. Example of lexical stress comprehension trial stimuli

Phrase stress subtest:

- Participants listen to and produce minimal pairs of phrases in stress
  - e.g., "The green house" vs "The greenhouse spoils the view"

METHODS Cont'd

Contrastive stress subtest:

- *Comprehension:*
  - Story was given for context
    - e.g., "The person on the screen bought some socks. She forgot to buy one color"
  - Participants then listened to shopper say, "I wanted **BLUE** and black socks" or "I wanted blue and **BLACK** socks" and indicated which color socks the shopper forgot to buy
- *Production:*
  - Participants used contrastive stress to "correct" an utterance
    - e.g., they hear "the green cow has the ball," but the computer screen displays a green sheep with a ball, they might say "No the green **SHEEP** has the ball"(See Fig. 2)

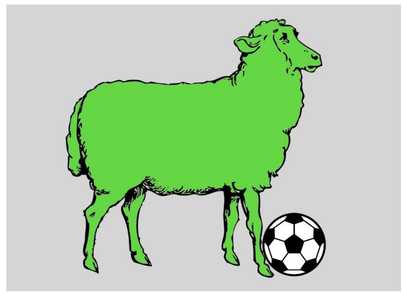

Figure 2. Example of contrastive stress production trial stimuli

RESULTS

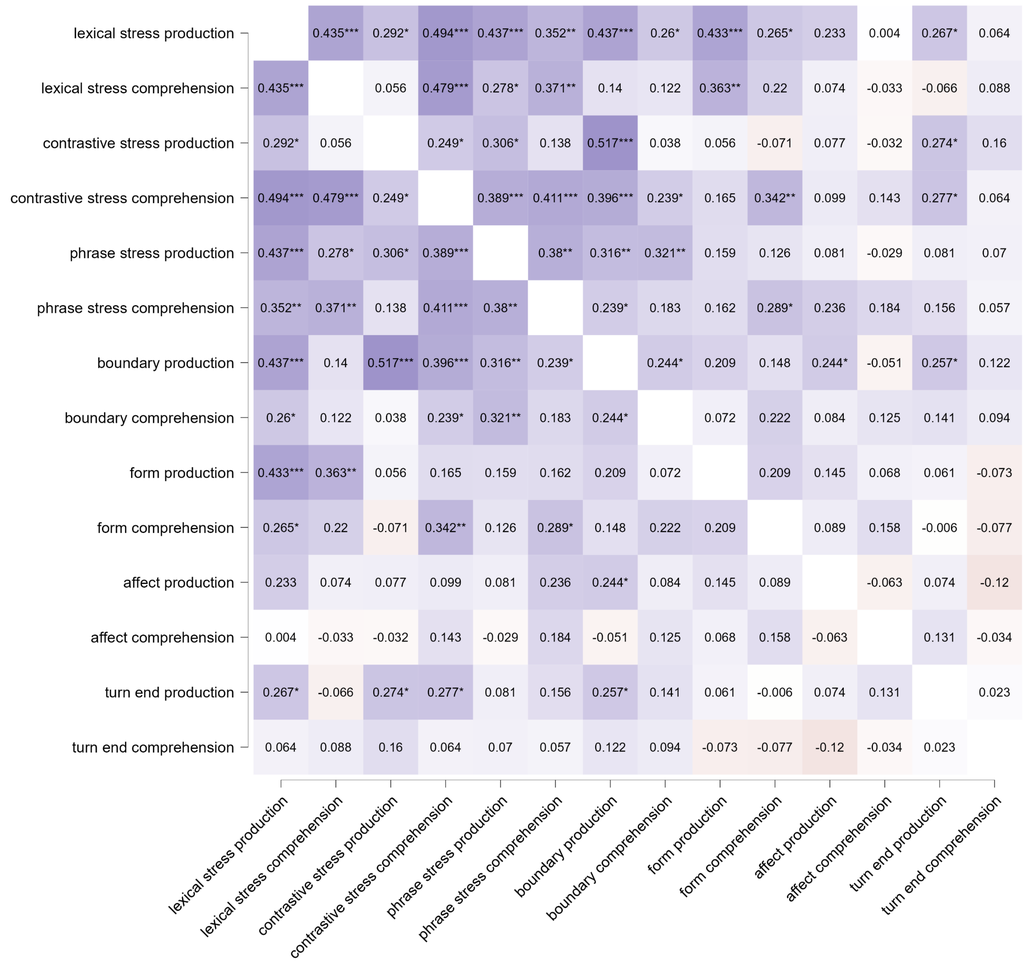

Figure 3. The Spearman's Rho heatmap shows that the **production and comprehension scores were significantly correlated for all three stress subtasks** along with the boundary subtask. **There were no significant correlations** between the production and comprehension **of other subtasks**.

RESULTS Cont'd

- Our results suggest that:
  - Those successful at producing prosody are better at interpreting it
  - **Production/comprehension link is stronger for prosodic stress** than other uses of prosody.
    - However, correlations are **moderate at best**
      - Argues against a motor theory/analysis through synthesis model of prosody
  - **People who are proficient in one type of stress tend to be proficient in the other two types of stress** (both production and comprehension)
    - However, the relationships among the different types of stress are not perfect
- Within linguistics, **lexical stress, phrase stress and contrastive stress** are **different** from one another in terms of their:
  - acoustic realization
  - function
- The **weak to moderate** stress correlations is consistent with these **differences in acoustic realization and linguistic function being psychologically real**

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