The Role of Phonetic Detail in Associating Phonological Units
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Experiment I

What does it mean to be allocated a node?
- The nucleus-coda connection is stronger than the onset-nucleus connection.
- Both of these views capture the idea that the nucleus is more strongly fused with the coda than with the onset. BUT

Under the tree-structural view the rime is allocated a node while the body is not.
- Under the dependency-based view, neither the rime nor the body are allocated a node.

What does it mean to be allocated a node?
- Under both accounts, the syllable is a network.
- A network is a set of nodes connected by links.
- A link can only connect two nodes.
- A node is something that can be associated with something else.

Hypothesis:
The tree-structural account predicts that associating a rime with something else (e.g., an affix) should be easier than associating the body with something else. The dependency-based account does not make this prediction.

Paradigm:
- In Experiment I, training includes stem syllables from training as well as novel stem syllables. White noise used instead of affix.

Methods:
- Testing includes stem syllables from training as well as novel stem syllables. White noise used instead of affix.

Results:
- Rime-affix associations are easier to learn than body-affix associations.
- The rime (N+Cd) is a node.
- The body (On+N) is not.

The same as in the testing stage of Experiment I

Participants:
30 native English speakers

Results:
- Ease of vowel categorization predicts ease of accessing associations of a rime or body.
- Vowel categorization and constituency of the biphone make significant independent contributions to accuracy in accessing associations.

Conclusion:
- The rime-affix associations must have been formed at the type level.
- The easier it is to categorize a vowel into the right phonemic category, the easier it is to recognize the new token of a previously presented rime or body as being ‘the same’ as a rime or body presented during training.
- Phonetic classification is not automatic.
- If a rime or body is recognized as being a ‘trained’ rime or body, then the associations of the trained rime type can be accessed, leading to accurate performance.
- The non-automatic access to phonemic-level categories may explain why vowels, which are more variable, are more difficult to associate than consonants (Bonatti et al. 2005, Creel et al. 2006, present study): tokens of a vowel phoneme are more divergent → more difficult to classify as being ‘the same’

The rime/body distinction contributes to explaining accuracy when ease of vowel categorization is controlled
- Vowel classification alone accounts for 62% of between-item variation while vowel classification plus the rime/body status account for 89%.
- The relationship between vowel classification and accuracy in accessing associations of the unit containing the vowel is independent of the rime/body status of the unit containing the vowel.
- A token of a rime is more likely to be extracted from the acoustic signal than a token of a body. AND/OR
- Tokens of a rime are easier to classify as being ‘the same’ than tokens of a body.

References:

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References:

Abstract:
In the present paper we present evidence that learners can learn associations between units at the phonemic level of abstraction but the process of phonemic categorization is not error-free, hence the likelihood that a phonological unit’s associations will be accessed (and strengthened) depends in part on whether the unit’s phonemic identity will be detected in time.

Experiment II

Hypothesis:
- Perhaps, rime-affix associations are easier to form because different tokens of the same rime are more perceptually similar than different tokens of the same body.
- If the tokens of a body are less perceptually similar than tokens of a rime, they may be more difficult to recognize as belonging to the same category.

Methods:
- Task: Vowel categorization
- Decide whether the vowel you are hearing is /i/ as in ‘but’ or /e/ as in ‘bat’.
- Stimuli: The same as in the testing stage of Experiment I

Participants:
- 30 native English speakers

Results:
- Ease of vowel categorization predicts ease of accessing associations of a rime or body.
- Ease of vowel categorization and constituency of the biphone make significant independent contributions to accuracy in accessing associations.

Conclusion:
- The rime-affix associations must have been formed at the type level.
- However, the easier it is to categorize a vowel into the right phonemic category, the easier it is to recognize the new token of a previously presented rime or body as being ‘the same’ as a rime or body presented during training.
- Phonetic classification is not automatic.
- If a rime or body is recognized as being a ‘trained’ rime or body, then the associations of the trained rime type can be accessed, leading to accurate performance.
- The non-automatic access to phonemic-level categories may explain why vowels, which are more variable, are more difficult to associate than consonants (Bonatti et al. 2005, Creel et al. 2006, present study): tokens of a vowel phoneme are more divergent → more difficult to classify as being ‘the same’

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