The role of rhythm in iterative-infixing ludlings

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Introduction
Yu (2007, 2008) presents a general analysis of iterative-infixing ludlings under which common behaviors like reduplication are phonological repairs to satisfy a dominant output rhythmic constraint. I conducted a ludling learning experiment to determine whether games with a single type of rhythmic unit in the output are easier to learn than games where constraint interaction forces occasional violation of the rhythmic constraint. Significantly higher gains from training in the rhythmic game suggest that there are grammar-external mechanisms favoring ludlings with strict rhythmic alternations, explaining their typological proliferation.

Design and procedure

Training sets: Subjects heard 16 pairs of nonce words and their language game outputs in one of two games. They were instructed to deduce the rule or rules transforming the first word into the second word.

Test sets: Subjects heard 20 pairs of nonce words and possible language game outputs. They decided whether the second word was the correct language game output of the first based on the game they had learned in the training set. (50% of outputs were correct and 50% were incorrect.) The experiment concluded after any test set in which the subject scored at least 80%. If the subject did not attain 80% accuracy in a test set, they participated in another training set and another test set up to a maximum of three pairs of training and test sets.

Participants
18 participants from University of Chicago community. 12 male, 6 female, ages 18-29. 1 male and 1 female excluded for failing to learn a canonical ludling in a task acclimation phase. 1 female excluded for inadequate attention. Subjects volunteered to participate, participated for course credit, or received $10 for completing five tasks.

Conditions
Two constructed iterative-infixing ludlings based on Löfflisch. Different strategies for satisfying a constraint family mandating that one source syllable correspond to three output syllables.

Conclusions

The significant interaction between condition and the effect of training supports a preliminary conclusion that iterative-infixing ludlings with regular output rhythm alternations are easier to learn than games with multiple types of output rhythmic units. This supports a hypothesis under which iterative-infixing ludlings without regular rhythm are typologically rare because they pose learning and implementation challenges not presented by games with regular rhythm.

Results and analysis

Logistic mixed-effects regression model. Dependent variable: accuracy on a single test item. Main effects of condition, number of training items seen before responding, and participant sex. Interaction between condition and training. Random intercepts for participant and “source language” word (i.e., item).

| Fixed Effects | Estimate | Std. Error | z-value | Pr(>|z|) |
|---------------|----------|------------|---------|----------|
| (Intercept)   | 0.683    | 0.558      | 1.223   | 0.2215   |
| Condition     |          |            |         |          |
| Consistent    | -0.898   | 0.773      | -1.162  | 0.2452   |
| Training      | 0.028    | 0.014      | 2.015   | 0.0439*  |
| SexMale       | -0.213   | 0.427      | -0.498  | 0.6182   |
| Condition*Training | 0.068   | 0.034      | 2.021   | 0.0433*  |

Significant main effect of training: Subjects’ accuracy improved with exposure to additional training items. This effect was expected regardless of hypothesis.

Significant interaction between condition and training: The gains from exposure to additional training items were larger in the Consistent condition than in the Alternating condition.

References