Morphemic Harmony: Evidence from Artificial Grammar Learning  
Sara Finley; Elmhurst College; finleys@elmhurst.edu; paper or poster

Finley (2009) proposes a distinction between phonemic harmony, whereby vowels or consonants agree in a specific feature value and morphemic harmony, a harmonic process controlled by the exponence of a specific morpheme. In morphemic harmony in Kanembu (Akinlabi, 1994), the incompletive morpheme is realized as [+ATR] on all vowels in the word. Finley’s (2009) proposal predicts the possibility that a morpheme may realize itself on both the first and last components in a word as a ‘featural circumscript’. Because both morphemic harmony and circumscripts are rare in the world’s languages, it is unclear whether the lack of multiple exemplars of such patterns demonstrates the rarity of the phenomenon or the fact that the predictions in Finley (2009) are not truly borne out. The present paper uses an artificial grammar learning paradigm to provide evidence for the possibility of featural circumscripts in morphemic harmony.

In Finley’s (2009) proposal, morphemic harmony occurs when a morpheme realizes itself through a particular feature value (e.g., [+ATR], [+Voi]). This feature value can be realized on the leftmost edge of a word, the rightmost edge of a word, or on all vowels or consonants of a word. In Optimality Theory (Prince and Smolensky, 1993/2004), this is accounted for using the constraints L-ANCHOR, R-ANCHOR, and O-CONTIGUITY and featural identity. These constraints predict that when both ANCHOR constraints outrank both ID and O-CONTIGUITY, a featural circumscript will emerge in which the first and the last components of the word are marked by the featural affixation, referred to as first-last harmony. This prediction is unusual for two reasons. First, there are very few true cases of featural circumscripts (Finley, 2009). Second, there are proposals that state that first-last harmony should not exist in phonemic harmony (Heinz and Idsardi, 2011).

The present study tests the hypothesis that morphemic harmony should be more available to the learner than phonemic harmony. Adult English speaking participants were exposed to an artificial language in which the first and the last stop consonant of a CVCVC word agreed in voicing. In the Morphemic condition, participants heard a word in which the first and last consonants were voiceless (e.g., [p菩提], [k菩提], etc.), followed by a word in which the first and the last consonants were voiced (e.g., [菩提], [菩提], etc.). Participants were told that they were listening to pairs of words in which the first word was a singular form and the second word was a plural form. In the Phonemic condition, participants heard all the words from the Morphemic condition, but in a random order. Participants were told that they were listening to a language, but no morphological information was given. Following training, participants were given a two-alternative forced-choice task in which participants chose between harmonic and disharmonic items (e.g., [菩提] vs. *[菩提]). Participants in the Morphemic condition were significantly more likely to select the harmonic item than participants in the Phonemic condition, $F(1, 32) = 4.72, p = 0.036$, as illustrated in Figure 1. This suggests that morphemic harmony was more available to the learners than phonemic harmony, supporting the view that first-last harmony is a possible property of morphemic harmony.
Figure 1
Experiment Results: Means and Standard Error

<table>
<thead>
<tr>
<th></th>
<th>Phonemic</th>
<th>Morphemic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phonemic</td>
<td>0.5</td>
<td>0.6</td>
</tr>
<tr>
<td>Morphemic</td>
<td>0.6</td>
<td>0.8</td>
</tr>
</tbody>
</table>

Legend:
- □ Old
- □ New