

# Graded Constraints in English Word Forms

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## 1 Interesting patterns in occurrence rates...

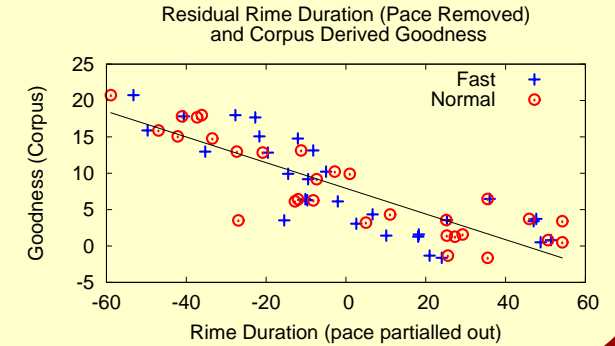
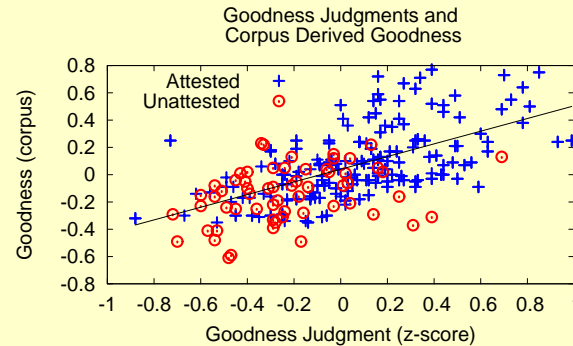
|     |      | Voiced      |     |     |     |     | Short (V)   |   |      |     |     |     |     |     |    |
|-----|------|-------------|-----|-----|-----|-----|-------------|---|------|-----|-----|-----|-----|-----|----|
|     |      | Long (VV)   |     |     |     |     | Short (V)   |   |      |     |     |     |     |     |    |
|     |      | Embellished |     |     |     |     | Embellished |   |      |     |     |     |     |     |    |
| Cod | alon | a           | e   | n_  | l_  | z_  | z_          | d | alon | e   | n_  | l_  | z_  | z_  | d  |
|     |      |             |     |     |     |     |             |   |      |     |     |     |     |     | 0. |
| d   |      | 12.2        | 2   | 1.9 |     |     |             |   | 14.4 | 6.8 | 1   |     |     |     | 2  |
| b   |      | 2.4         |     |     |     |     |             |   | 13   |     | 0.4 |     |     |     |    |
| g   |      | 1.2         |     |     |     |     |             |   | 15.4 |     |     |     |     |     |    |
|     |      | Unvoiced    |     |     |     |     | Short (V)   |   |      |     |     |     |     |     |    |
|     |      | Long (VV)   |     |     |     |     | Short (V)   |   |      |     |     |     |     |     |    |
|     |      | Embellished |     |     |     |     | Embellished |   |      |     |     |     |     |     |    |
| Cod | alon | a           | e   | n_  | l_  | s_  | s_          | t | alon | e   | n_  | l_  | s_  | s_  | t  |
| t   |      | 19.2        | 2.6 | 1.1 | 3.9 | 0.2 |             |   | 22.6 | 8   | 4.6 | 7.8 | 0.2 |     |    |
| p   |      | 8.7         |     | 0.5 | 0.2 |     |             |   | 17   | 9.4 | 1.6 | 1.2 | 0.8 | 0.8 |    |
| k   |      | 13.5        | 0.1 | 0.8 | 0.2 |     |             |   | 21.6 | 12  | 2.2 | 3.2 | 5.6 | 1.8 |    |

n\_ = preceding homorganic nasal, l\_ = preceding liquid, z/s\_ preceding coronal fricative, \_z/s subsequent coronal fricative, \_d/t subsequent coronal stop.

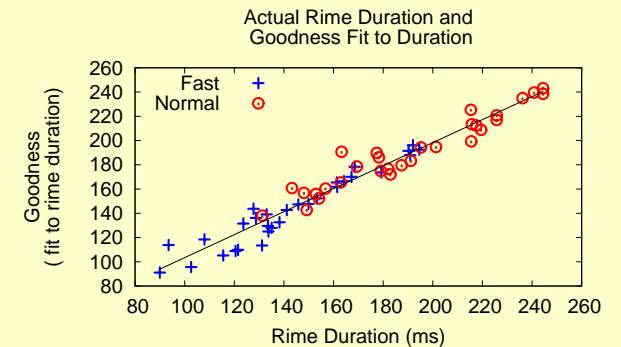
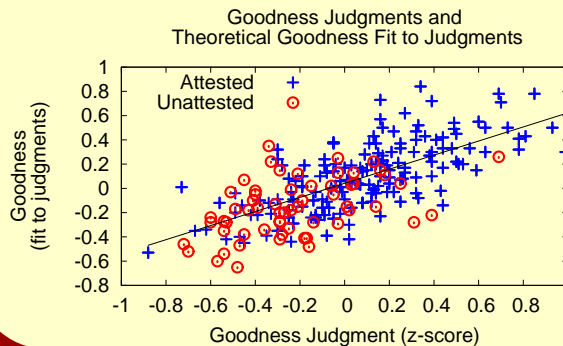
## 2 Accounted for by weighted parameters...

| Data Set    |        |         |           |
|-------------|--------|---------|-----------|
| Constraint  | Corpus | Ratings | Durations |
| base        | 20.73  | 0.81    | 138.1     |
| Long Vowel  | -2.9   | -0.30   | 4.6       |
| Voiced Coda | -4.8   | -0.29   | 22.7      |
| Labial Stop | -3.0   | -0.19   | 17.8      |
| Dorsal Stop | -2.7   | -0.12   | 14.1      |
| Nasal Emb.  | -11.5  | -0.40   | 33.9      |
| Pre-s Emb.  | -14.2  | -0.35   | 82.6      |
| Pace        | -      | -       | -47       |

## 3 Same weighted parameters account for ratings & durations...



## 4 Or fits can be improved using regression...



| Correlations Among Weights |       |
|----------------------------|-------|
| Corpus & Ratings           | 0.77* |
| Corpus & Durations         | 0.9** |
| Ratings & Durations        | -0.52 |

\* p < 0.1  
\*\* p < 0.05

- Small number parameters
- Real-valued weights
- Capture variance across multiple data sets
- Similar weights