Minding gaps or seeking bumps in learning phonotactics?
Vsevolod Kapatsinski
University of Oregon and Princeton University

Usage-based Phonology:
(Bybee 2001, Langacker 1987, Nessel 2008; implemented here)

Rule-based Phonology:
Albright & Hayes (2003)
Split every pair into change and context
Generalize over contexts

What’s wrong with rules?
Splitting words into change and context predicts that examples of {ʧi} either hurt
{k;tp} to {k;tp} compared to {k;tp} (Albright & Hayes 2003)
or have no effect

What’s else is there in the grammar beyond these schemas?

1. “[chunk]!” constraints perseverating chunks from the known (singular) form into the to-be-produced (plural) form
Supported by general preference for insertion over deletion
(Goldstein et al. 2007, Hartnacker 2002, Stemberger 1991 for speech errors

Initial ranking (prior to experiment):
“kt” << “it” << “pt”

Labials want to be preserved
Common error: p-ʧp[i]
Labial palatalization either not learned or fully overgeneralized to velars and alveolars:
PL {ʧi} overtake “ki” before “ti” before “pi”

2. Second-order schemas:
Generalizations over the first-order schemas above, e.g., SG-{k}PL-{tfi}
Necessary for purely paradigmatic mappings (Booij 2007; Nessel 2008)
Hard to learn (Braine et al. 1990, Frogo & MacDonald 1998 inter alia)
Probably not yet learned in our experiments

Still no split into change and context, generalization is over first-order schemas
therefore 0→a is not a possible schema and {tfi} should still help (tp;k)→{tfi}

Subjects trained on

Subjects trained on

Subjects trained on

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Why? I suggest there is no split into change and context.

Why non-zero? (**X)
Why not extract, e.g., “VC{voice}”?

Compare Tapa(chi) and Tipi(chi)
In both languages, there is no [k]
But... if [k] were just like other Ci sequences it would occur more often in Tipi
The gap is more noticeable in Tipi (Frisch et al. 2004)
p value at Node 5 above is lower

→[ki] avoidance should be stronger in Tipi
The opposite is true for humans (Kapatsinski 2010).

Why do p→pi and t→ti help k→ki?
Note the path terminating in Node 5 in tree above Schema for stop-i-final plurals: PL-V-[cont; Pal]i
If we prohibit [-Pal], we get V-[cont; DelRel]i

Is this just because there is no [k] in plurals at all?
No: effect persists if we add k→ka examples (p<.001)

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SG-V-[cont;voice;Lingu]i / PL-V-[tfi]
SG-V-[DelRel;voice]i / PL-V-[ij]