

Segmentation of Spoken Words into Syllables by English-speaking Children as Compared to Adults

Rebecca Treiman
Washington University

Judith A. Bowey
University of Queensland

Derrick Bourassa
Acadia University

Children can determine the number of syllables in a spoken word at an early age

dog = 1, *salad* = 2, *valentine* = 3

Where are the boundaries between syllables located?

salad = /sæɪ/ + /əɪd/ /l/ in first syllable

OR /sæ/ + /ləɪd/ /l/ in second syllable

OR /sæɪ/ + /ləɪd/ /l/ in both syllables,
or ambisyllabic

Why should we care about how children syllabify spoken words?

- To better understand the role of syllables in reading, spelling, and phonological awareness
- To make good use of syllables in instruction
- To learn about whether and how people's conceptions of spoken language are affected by knowledge of printed language

Experiment 1: Influence of spelling on oral syllabification in children and adults

Experiment 2: Influence of phonological variables on oral syllabification in children and adults

Effects of spelling on oral syllabification

Strong effects in English-speaking adults (Treiman & Danis, 1988; Derwing, 1992)

Studies of English-speaking children

Fallows (1981): did not consider possible role of spelling knowledge on oral syllabification

Zamuner & Ohala (1999): apparent effect of spelling in 3 year olds (?!)

Participants in Experiment 1

- 44 first graders (mean age 6 years, 5 months)
- 43 second graders (mean age 7,5)
- 47 sixth graders (mean age 11,7)
- 41 college students

Sample stimuli for oral syllabification task of Experiment 1

Practice items

raincoat, bookshelf, number

Test items

C spelling

salad

habit

panel

CC spelling

valley

rabbit

tunnel

Procedure for oral syllabification task of Experiment 1

First part task:

Practice items: /ren/ for *raincoat*, /nʌm/ for *number*

Test items: /sæl/ or /sæ/ for *salad*

Second part task:

Practice items: /kɒt/ for *raincoat*, /bʌ/ for *number*

Test items: /ləd/ or /əd/ for *salad*

Possible responses to *salad*

	First part task	Second part task
First syllable only:	sæɪ	əd
Second syllable only:	sæ	ləd
Both syllables:	sæɪ	ləd
Other responses:	sæ	əd (neither syllable)
	sæ	æləd (unusual response)

Proportion of responses of various types by first graders in oral syllabification task of Experiment 1

	First syllable only	Second syllable only	Both syllables	Other responses
C (e.g., <i>salad</i>)	.15	.03	.43	.39
CC (e.g., <i>valley</i>)	.15	.02	.45	.38

No significant effect of spelling on oral syllabification for first graders

Proportion of responses of various types by second graders in oral syllabification task of Experiment 1

	First syllable only	Second syllable only	Both syllables	Other responses
C (e.g., <i>salad</i>)	.19	.02	.48	.31
CC (e.g., <i>valley</i>)	.18	.02	.48	.32

No significant effect of spelling on oral syllabification for second graders

Proportion of responses of various types by sixth graders in oral syllabification task of Experiment 1

	First syllable only	Second syllable only	Both syllables	Other responses
C (e.g., <i>salad</i>)	.40	.01	.49	.10
CC (e.g., <i>valley</i>)	.25	.00	.65	.10

Significant effect of spelling on oral syllabification in sixth graders

Proportion of responses of various types by college students in oral syllabification task of Experiment 1

	First syllable only	Second syllable only	Both syllables	Other responses
C (e.g., <i>salad</i>)	.31	.00	.64	.04
CC (e.g., <i>valley</i>)	.15	.00	.81	.04

Significant effect of spelling on oral syllabification in college students

Spelling task of Experiment 1

- Hear word, hear word in sentence, hear word again
- See two choices for spelling that differ only in single vs. double consonant
- Place check mark by correct spelling

kat cat (practice item)

rabbit rabit (test item)

salad sallad (test item)

Proportion correct responses in spelling task of Experiment 1

First	.58*
Second	.66*
Sixth	.91*
College	.98*

* Significantly above level expected by chance

Conclusions from Experiment 1

Spelling influences oral syllabification, but only when knowledge of spelling is well entrenched

No evidence of spelling effects in youngest children, contrary to Zamuner and Ohala

Increases in both-syllable responses with age, when seen, primarily reflect knowledge of spelling rather than phonological factors, contrary to Fallows

Sample stimuli for oral syllabification task of Experiment 2

Short vowel

Sonorant consonant (e.g., liquid, nasal)	Obstruent consonant (e.g., stop, fricative)
<i>limit</i>	<i>metal</i>
<i>melon</i>	<i>radish</i>

Long vowel

Sonorant consonant (e.g., liquid, nasal)	Obstruent consonant (e.g., stop, fricative)
<i>demon</i>	<i>baby</i>
<i>pilot</i>	<i>tiger</i>

Participants in Experiment 2

- 23 second graders (mean age 8,0)
- 25 sixth graders (mean age 11,10)
- 20 college students

Proportion of responses of various types by second graders in oral syllabification task of Experiment 2

	First syllable only	Second syllable only	Both syllables	Other responses
Short vowel				
sonorant (e.g., <i>limit</i>)	.66	.02	.21	.10
obstruent (e.g., <i>metal</i>)	.59	.05	.22	.14
Long vowel				
sonorant (e.g., <i>demon</i>)	.40	.26	.13	.21
obstruent (e.g., <i>baby</i>)	.30	.23	.17	.30

Effects of vowel type and consonant sonority

Proportion of responses of various types by sixth graders in oral syllabification task of Experiment 2

	First syllable only	Second syllable only	Both syllables	Other responses
Short vowel				
sonorant (e.g., <i>limit</i>)	.37	.11	.47	.05
obstruent (e.g., <i>metal</i>)	.29	.18	.47	.07
Long vowel				
sonorant (e.g., <i>demon</i>)	.19	.43	.27	.10
obstruent (e.g., <i>baby</i>)	.09	.57	.21	.14

Effects of vowel type and consonant sonority

Proportion of responses of various types by college students in oral syllabification task of Experiment 2

	First syllable only	Second syllable only	Both syllables	Other responses
Short vowel				
sonorant (e.g., <i>limit</i>)	.32	.19	.43	.06
obstruent (e.g., <i>metal</i>)	.28	.28	.38	.06
Long vowel				
sonorant (e.g., <i>demon</i>)	.16	.50	.21	.13
obstruent (e.g., <i>baby</i>)	.10	.65	.15	.10

Effects of vowel type and consonant sonority

Conclusions from Experiment 2

Vowel quality and consonant sonority influence oral syllabification by at least second grade, with few developmental differences in the strength of these effects

Effects of vowel quality and consonant sonority appear to be true phonological effects, not spelling effects in disguise

Linguistic theories of syllabication may need to be modified to account for effects of vowel quality and consonant sonority

- Does literacy affect our conceptions of spoken language?
 - Categorization of phonemes (/t/ or /d/ in *meteor*?)
 - Conceptions of syllable boundaries (/l/ in one or both syllables in *valley*?)
- How does syllabification change from childhood to adulthood?
 - Influence of phonology – little or no developmental change
 - Influence of spelling – strong developmental change
- How can syllables be used to best advantage in instruction?
 - Decode multisyllabic words based on syllable units
 - Which units to use?
 - *salad*: better as *sal* + *ad* than *sa* + *lad*