

A Model Comparison

		AIC	BIC	logLik	p
Baseline	-	10228.5	10278	-5107.2	—
Baseline	+ Whole-word	10170.3	10227	-5077.1	8.531e-15 ***
	+ Stem	10218.6	10275	-5101.3	0.0005554 ***
	+ Conditional	9987.0	10044	-4985.5	<2e-16 ***
Whole-word	+ Stem	10097.7	10162	-5039.9	< 2.2e-16 ***
	+ Conditional	9988.8	10053	-4985.4	<2.2e-16 ***
Stem	+ Whole-word	10097.7	10162	-5039.3	<2.2e-16 ***
	+ Conditional	9988.2	10052	-4985.1	<2.2e-16 ***
Conditional	+ Whole-word	9988.8	10053	-4985.4	0.6509
	+ Stem	9988.2	10052	-4985.1	0.3688
Whole-word, Stem	+ Conditional	9988.5	10060	-4984.3	<2.2e-16 ***
Whole-word, Conditional	+ Stem	9988.5	10060	-4984.3	0.1304
Stem, Conditional	+ Whole-word	9988.5	10060	-4984.3	0.1942470

Table 1: Comparison of full dataset nested mixed effects logistic regression models for CSD.

		AIC	BIC	logLik	p
Baseline	-	6686.9	6726.2	-3337.4	—
Baseline	+ whole-word	6609.2	6655.1	-3297.6	<2.2e-16 ***
	+ Stem	6643.9	6689.8	-3315.0	1.146e-11 ***
	+ Conditional	6526.8	6572.7	-3256.4	<2e-16 ***
Whole-word	+ Stem	6566.1	6618.6	-3275.0	1.887e-11 ***
	+ Conditional	6525.8	6578.3	-3254.9	<2.2e-16 ***
Stem	+ Whole-word	6566.1	6618.6	-3275.0	<2.2e-16 ***
	+ Conditional	6524.6	6577.1	-3254.3	<2.2e-16 ***
Conditional	+ Whole-word	6525.8	6578.3	-3254.9	0.08174 .
	+ Stem	6524.6	6577.1	-3254.3	0.03937 *
Whole-word, Stem	+ Conditional	6523.8	6582.8	-3252.9	2.856e-11 ***
Whole-word, Conditional	+ Stem	6523.8	6582.8	-3252.9	0.0459 *
Stem, Conditional	+ Whole-word	6523.8	6582.8	-3252.9	0.09 .

Table 2: Comparison of nested mixed effects logistic regression models for CSD in monomorphemes.

Model1	Model2	AIC	BIC	logLik	p
Baseline	-	3381.1	3418.4	-1684.5	—
Baseline	+ Whole-word	3381.7	3425.2	-1683.9	0.2433
	+ Stem	3377.8	3421.3	-1681.9	0.02124 *
	+ Conditional	3326.7	3370.2	-1656.2	8.602e-16 ***
Whole-word	+ Stem	3350.2	3400.0	-1667.1	7.149-09 ***
	+ Conditional	3321.0	3370.7	-1652.5	2.318e-15 ***
Stem	+ Whole-word	3350.2	3400.0	-1667.1	5.453e-08 ***
	+ Conditional	3321.2	3370.9	-1652.6	1.956e-14 ***
Conditional	+ Whole-word	3321.0	3370.7	-1652.5	0.5913
	+ Stem	3321.2	3370.9	-1652.6	0.8509
Whole-word, Stem	+ Conditional	3322.2	3378.1	-1652.1	4.252e-08 ***
Whole-word, Conditional	+ Stem	3322.2	3378.1	-1652.1	0.3864
Stem, Conditional	+ Whole-word	3322.2	3378.1	-1652.1	0.31652

Table 3: Comparison of nested mixed effects logistic regression models for CSD in regular past forms.

B Frequency model summaries

	Estimate	Std. Error	z value	Pr(> z)
(Intercept)	-0.61	0.06	-9.34	<2e-16
Morph: Complex	0.60	0.03	23.11	<2e-16
Speech rate	-0.22	0.03	-8.35	<2e-16
Following syllabifiable C	0.72	0.09	8.01	1.16e-15
Following pause	1.28	0.07	18.52	<2e-16
Following vowel	1.86	0.06	29.02	<2e-16

Table 4: CSD(full_dataset) ~ Morph + SpeechRate + Following + (1|Speaker)

	Estimate	Std. Error	z value	Pr(> z)
(Intercept)	-0.63	0.07	-9.60	<2e-16
Morph: Complex	0.52	0.03	18.50	<2e-16
Speech rate	-0.21	0.03	-7.95	1.91e-15
Following syllabifiable C	0.72	0.09	7.92	2.43e-15
Following pause	1.26	0.07	18.19	<2e-16
Following vowel	1.87	0.06	29.04	<2e-16
Wholeword freq	-0.22	0.03	-7.67	1.66e-14

Table 5: CSD(full_dataset) ~ WholewordFreq + Morph + SpeechRate + Following + (1|Speaker)

	Estimate	Std. Error	z value	Pr(> z)
(Intercept)	-0.60	0.07	-9.25	<2e-16
Morph: Complex	0.60	0.03	23.16	<2e-16
Speech rate	-0.22	0.03	-8.18	2.83e-16
Following syllabifiable C	0.72	0.09	7.94	1.98e-15
Following pause	1.26	0.07	18.29	<2e-16
Following vowel	1.87	0.06	29.01	<2e-16
Stem freq	-0.09	0.03	-3.44	0.000574

Table 6: CSD(full_dataset) ~ StemFreq + Morph + SpeechRate + Following + (1|Speaker)

	Estimate	Std. Error	z value	Pr(> z)
(Intercept)	0.24	0.08	2.85	0.00438
Morph: Complex	0.11	0.04	2.72	0.00649
Speech rate	-0.21	0.03	-7.82	5.26e-15
Following syllabifiable C	0.80	0.09	8.76	<2e-15
Following pause	1.34	0.07	19.04	<2e-16
Following vowel	1.92	0.07	29.18	<2e-16
Conditional freq	-1.80	0.12	-15.35	<2e-16

Table 7: CSD(full_dataset) ~ ConditionalFreq + Morph + SpeechRate + Following + (1|Speaker)

	Estimate	Std. Error	z value	Pr(> z)
(Intercept)	-0.70	0.07	-10.66	<2e-16
Morph: Complex	0.30	0.04	7.94	2.11e-15
Speech rate	-0.22	0.03	-7.94	2.09e-15
Following syllabifiable C	0.74	0.09	8.11	4.19e-16
Following pause	1.30	0.07	18.62	<2e-16
Following vowel	1.89	0.06	29.08	<2e-16
Wholeword freq	-0.79	0.08	-10.47	<2e-16
Stem freq	0.56	0.07	8.36	<2e-16

Table 8: CSD(full_dataset) ~ WholewordFreq + StemFreq + Morph + SpeechRate + Following + (1|Speaker)

	Estimate	Std. Error	z value	Pr(> z)
(Intercept)	0.23	0.09	2.50	0.01234
Morph: Complex	0.11	0.04	2.75	0.00589
Speech rate	-0.21	0.03	-7.80	6.38e-15
Following syllabifiable C	0.80	0.09	8.73	<2e-16
Following pause	1.34	0.07	18.97	<2e-16
Following vowel	1.92	0.07	29.18	<2e-16
Wholeword freq	-0.01	0.03	-0.45	0.65086
Conditional freq	-1.77	0.13	-13.41	<2e-16

Table 9: CSD(full_dataset) ~ WholewordFreq + ConditionalFreq + Morph + SpeechRate + Following + (1|Speaker)

	Estimate	Std. Error	z value	Pr(> z)
(Intercept)	0.23	0.08	2.75	0.00591
Morph: Complex	0.12	0.04	2.81	0.00494
Speech rate	-0.21	0.03	-7.78	7.34e-15
Following syllabifiable C	0.80	0.09	8.73	<2e-16
Following pause	1.34	0.07	18.95	<2e-16
Following vowel	1.92	0.07	29.18	<2e-16
Stem freq	-0.02	0.03	-0.90	0.36887
Conditional freq	-1.78	0.12	-15.02	<2e-16

Table 10: CSD(full_dataset) ~ StemFreq + ConditionalFreq + Morph + SpeechRate + Following + (1|Speaker)

	Estimate	Std. Error	z value	Pr(> z)
(Intercept)	0.34	0.12	2.91	0.00366
Morph: Complex	0.12	0.04	2.87	0.00407
Speech rate	-0.21	0.03	-7.79	6.98e-15
Following syllabifiable C	0.81	0.09	8.78	<2e-16
Following pause	1.34	0.07	18.95	<2e-16
Following vowel	1.92	0.07	29.19	<2e-16
Wholeword freq	0.13	0.10	1.31	0.19082
Stem freq	-0.13	0.08	-1.53	0.12731
Conditional freq	-1.96	0.18	-10.76	<2e-16

Table 11: CSD(full_dataset) ~ WholewordFreq + StemFreq + ConditionalFreq + Morph + SpeechRate + Following + (1|Speaker)

	Estimate	Std. Error	z value	Pr(> z)
(Intercept)	-1.04	0.08	-13.48	<2e-16
Speech rate	-0.16	0.03	-4.97	6.56e-07
Following syllabifiable C	0.75	0.11	6.80	1.07e-11
Following pause	1.27	0.09	14.90	<2e-16
Following vowel	1.38	0.08	17.15	<2e-16

Table 12: CSD(monomorphemes) ~ Morph + SpeechRate + Following + (1|Speaker)

	Estimate	Std. Error	z value	Pr(> z)
(Intercept)	-0.96	0.08	-23.29	<2e-16
Speech rate	-0.15	0.03	-4.50	6.56e-07
Following syllabifiable C	0.75	0.11	6.80	1.07e-11
Following pause	1.27	0.09	14.90	<2e-16
Following vowel	1.38	0.08	17.15	<2e-16
Wholeword freq	-0.31	0.04	-8.79	<2e-16

Table 13: CSD(monomorphemes) ~ WholewordFreq + Morph + SpeechRate + Following + (1|Speaker)

	Estimate	Std. Error	z value	Pr(> z)
(Intercept)	-1.04	0.08	-13.41	<2e-16
Speech rate	-0.15	0.03	-4.61	4.01e-06
Following syllabifiable C	0.76	0.11	6.83	8.52e-12
Following pause	1.25	0.09	14.61	<2e-16
Following vowel	1.39	0.08	17.16	<2e-16
Stem freq	-0.22	0.03	-6.65	3.01e-11

Table 14: CSD(monomorphemes) \sim StemFreq + Morph + SpeechRate + Following + (1|Speaker)

	Estimate	Std. Error	z value	Pr(> z)
(Intercept)	0.20	0.124	1.62	0.105
Speech rate	-0.15	0.03	-4.58	4.59e-06
Following syllabifiable C	0.82	0.11	7.23	4.83e-13
Following pause	1.30	0.087	15.01	<2e-16
Following vowel	1.43	0.08	17.34	<2e-16
Conditional freq	-1.65	0.13	-12.47	<2e-16

Table 15: CSD(monomorphemes) \sim ConditionalFreq + Morph + SpeechRate + Following + (1|Speaker)

	Estimate	Std. Error	z value	Pr(> z)
(Intercept)	-0.72	0.09	-8.43	<2e-16
Speech rate	-0.15	0.03	-4.54	5.55e-06
Following syllabifiable C	0.79	0.11	7.06	1.68e-12
Following pause	1.29	0.09	14.88	<2e-16
Following vowel	1.42	0.08	17.41	<2e-16
Wholeword freq	-1.20	0.15	-8.24	<2e-16
Stem freq	-0.86	0.13	6.40	1.59e-10

Table 16: CSD(monomorphemes) \sim WholewordFreq + StemFreq + Morph + SpeechRate + Following + (1|Speaker)

	Estimate	Std. Error	z value	Pr(> z)
(Intercept)	0.10	0.14	0.71	0.4790
Speech rate	-0.15	0.03	-4.50	6.69e-06
Following syllabifiable C	0.82	0.11	7.22	5.23e-13
Following pause	1.30	0.09	14.93	<2e-16
Following vowel	1.42	0.08	17.35	<2e-16
Wholeword freq	-0.08	0.04	-1.74	0.0821
Conditional freq	-1.49	0.16	-9.17	<2e-16

Table 17: CSD(monomorphemes) \sim WholewordFreq + ConditionalFreq + Morph + SpeechRate + Following + (1|Speaker)

	Estimate	Std. Error	z value	Pr(> z)
(Intercept)	0.12	0.13	0.92	0.3591
Speech rate	-0.15	0.03	-4.49	7.20e-06
Following syllabifiable C	0.82	0.11	7.22	5.13e-13
Following pause	1.30	0.09	14.90	<2e-16
Following vowel	1.42	0.08	17.34	<2e-16
Stem freq	-0.07	0.04	-2.06	0.0396
Conditional freq	-1.54	0.14	-10.85	<2e-16

Table 18: CSD(monomorphemes) \sim StemFreq + ConditionalFreq + Morph + SpeechRate + Following + (1|Speaker)

	Estimate	Std. Error	z value	Pr(> z)
(Intercept)	0.31	0.17	1.80	0.0717
Speech rate	-0.15	0.03	-4.49	7.25e-06
Following syllabifiable C	0.82	0.11	7.24	4.39e-13
Following pause	1.30	0.09	14.88	<2e-16
Following vowel	1.42	0.08	17.28	<2e-16
Wholeword freq	0.41	0.24	1.69	0.0920
Stem freq	-0.41	0.20	-2.03	0.0427
Conditional freq	-1.94	0.28	-6.97	3.24e-12

Table 19: CSD(monomorphemes) \sim WholewordFreq + StemFreq + ConditionalFreq + Morph + SpeechRate + Following + (1|Speaker)

	Estimate	Std. Error	z value	Pr(> z)
(Intercept)	-0.25	0.10	-2.56	0.0104
Speech rate	-0.34	0.05	-6.74	1.56e-11
Following syllabifiable C	0.58	0.15	3.89	9.98e-05
Following pause	1.21	0.12	10.36	<2e-16
Following vowel	2.86	0.12	23.59	<2e-16

Table 20: CSD(complex_forms) \sim Morph + SpeechRate + Following + (1|Speaker)

	Estimate	Std. Error	z value	Pr(> z)
(Intercept)	-0.28	0.10	-2.76	0.005799
Speech rate	-0.33	0.05	-6.66	2.76e-11
Following syllabifiable C	0.57	0.15	3.83	0.000126
Following pause	1.21	0.12	10.29	<2e-16
Following vowel	2.86	0.12	23.58	<2e-16
Wholeword freq	-0.06	0.05	-1.17	0.243553

Table 21: CSD(complex_forms) \sim WholewordFreq + Morph + SpeechRate + Following + (1|Speaker)

	Estimate	Std. Error	z value	Pr(> z)
(Intercept)	-0.26	0.10	-2.64	0.00823
Speech rate	-0.34	0.05	-6.85	7.44e-12
Following syllabifiable C	0.60	0.15	4.00	6.29e-05
Following pause	1.23	0.12	10.51	<2e-16
Following vowel	2.87	0.12	23.59	<2e-16
Stem freq	0.10	0.04	1.95	0.05139

Table 22: CSD(complex_forms) ~ StemFreq + Morph + SpeechRate + Following + (1|Speaker)

	Estimate	Std. Error	z value	Pr(> z)
(Intercept)	0.16	0.12	1.48	0.14
Speech rate	-0.33	0.05	-6.42	1.39e-10
Following syllabifiable C	0.70	0.15	4.54	5.64e-06
Following pause	1.32	0.12	11.02	<2e-16
Following vowel	2.91	0.12	23.64	<2e-16
Conditional freq	-2.09	0.26	-7.98	1.42e-15

Table 23: CSD(complex_forms) ~ ConditionalFreq + Morph + SpeechRate + Following + (1|Speaker)

	Estimate	Std. Error	z value	Pr(> z)
(Intercept)	-0.51	0.11	-4.69	2.80e-06
Speech rate	-0.34	0.05	-6.66	2.82e-11
Following syllabifiable C	0.60	0.15	3.95	7.93e-05
Following pause	1.26	0.12	10.63	<2e-16
Following vowel	2.88	0.12	23.58	<2e-16
Wholeword freq	-0.49	0.09	-5.26	1.48e-07
Stem freq	0.45	0.08	5.66	1.55e-08

Table 24: CSD(complex_forms) ~ WholewordFreq + StemFreq + Morph + SpeechRate + Following + (1|Speaker)

	Estimate	Std. Error	z value	Pr(> z)
(Intercept)	0.18	0.12	1.57	0.116
Speech rate	-0.33	0.05	-6.44	1.24e-10
Following syllabifiable C	0.70	0.15	4.57	4.99e-06
Following pause	1.32	0.12	11.03	<2e-16
Following vowel	2.91	0.12	23.64	<2e-16
Wholeword freq	0.03	0.05	0.54	0.590
Conditional freq	-2.12	0.27	-7.91	2.66e-15

Table 25: CSD(complex_forms) ~ WholewordFreq + ConditionalFreq + Morph + SpeechRate + Following + (1|Speaker)

	Estimate	Std. Error	z value	Pr(> z)
(Intercept)	0.16	0.11	1.43	0.153
Speech rate	-0.33	0.05	-6.42	1.41e-10
Following syllabifiable C	0.70	0.15	4.54	5.54e-06
Following pause	1.32	0.12	11.01	<2e-16
Following vowel	2.91	0.12	23.64	<2e-16
Stem freq	0.01	0.05	0.19	0.850
Conditional freq	-2.08	0.27	-7.65	1.94e-14

Table 26: CSD(complex_forms) ~ StemFreq + ConditionalFreq + Morph + SpeechRate + Following + (1|Speaker)

	Estimate	Std. Error	z value	Pr(> z)
(Intercept)	0.30	0.18	1.67	0.0946
Speech rate	-0.33	0.05	-6.40	1.56e-10
Following syllabifiable C	0.71	0.15	4.62	3.77e-06
Following pause	1.33	0.12	11.05	<2e-16
Following vowel	2.91	0.12	23.65	<2e-16
Wholeword freq	0.14	0.14	1.01	0.3140
Stem freq	-0.11	0.12	-0.87	0.3846
Conditional freq	-2.42	0.44	-5.53	3.12e-08

Table 27: CSD(complex_forms) ~ WholewordFreq + StemFreq + ConditionalFreq + Morph + SpeechRate + Following + (1|Speaker)