Supplemental Materials

Accompanying Conklin, J. T. (2024). Examining Recording Quality from Two Methods of Remote Data Collection in a Study of Vowel Reduction. *Journal of the Association for Laboratory Phonology.*

Appendix 1 – Target words

Target words with /ɪ/

The word <u>bid</u> means a bet at an auction.
The word <u>rabid</u> means an animal that's sick.
The word <u>bin</u> means a box for your litter.
The word <u>cabin</u> means a house in the woods.
The word <u>pick</u> means the option to choose.
The word <u>topic</u> means the theme of discussion.
The word <u>bit</u> means a very small amount.
The word <u>rabbit</u> means a small fuzzy animal.
The word <u>tick</u> means a dangerous bug.
The word <u>plastic</u> means a substance for objects.
The word <u>sick</u> means you have a disease.
The word <u>basic</u> means the simplest option.

Target words with /ɛ/

The word <u>pet</u> means an animal you live with.
The word <u>carpet</u> means the rug on the floor.
The word <u>test</u> means a thing that you study for.
The word <u>contest</u> means a competition or game.
The word <u>den</u> means the home of an animal.
The word <u>garden</u> means a place where you grow things.
The word <u>text</u> means a document or poem.
The word <u>context</u> means a relevant circumstance.
The word <u>vent</u> means a hole in the wall.
The word <u>convent</u> means a place where nuns live.

The word <u>Zen</u> means a mindset that's peaceful.

The word <u>dozen</u> means a group of twelve objects.

Target words with /æ/

The word <u>fast</u> means to go quickly.

The word <u>breakfast</u> means a morning meal.

The word <u>dance</u> means an artistic performance.

The word <u>guidance</u> means advice or instruction.

The word <u>tax</u> means money for the state.

The word <u>syntax</u> means the structure of language.

The word <u>pass</u> means a ticket or coupon.

The word <u>compass</u> means a thing that points north.

The word <u>badge</u> means a label you wear.

The word <u>cabbage</u> means a red or green vegetable.

The word <u>cast</u> means to throw away or lose.

The word <u>forecast</u> means a guess at the weather.

Target words with /ɑ/

The word <u>bot</u> means a computer playing a human.

The word <u>robot</u> means a machine that can move.

The word <u>con</u> means a planned-out deception.

The word <u>falcon</u> means a bird that hunts mice.

The word <u>lot</u> means a specific amount.

The word <u>pilot</u> means a person who flies planes.

The word <u>Tom</u> means a nickname for Thomas.

The word <u>symptom</u> means a sign of disease.

The word <u>shop</u> means a place you buy food.

The word <u>bishop</u> means a man of the church.

The word <u>rot</u> means a thing that's all moldy.

The word <u>carrot</u> means a crunchy orange food.

Target words with /ʌ/

The word <u>son</u> means a male child.
The word <u>person</u> means a human being.
The word <u>bum</u> means a person who's lazy.
The word <u>album</u> means a book full of pictures.
The word <u>duct</u> means a pipe for air or water.
The word <u>product</u> means a thing that you buy.
The word <u>cuss</u> means to say a bad word.
The word <u>circus</u> means a place that has clowns.
The word <u>cup</u> means the thing that you drink from.
The word <u>hiccup</u> means a particular spasm.
The word <u>pus</u> means a nasty white liquid.
The word <u>campus</u> means a place where a school is.

Appendix 2 - Microphones reported used by remote participants

1. "Steelseries"
2. "built in"
3. "HyperX SoloCast"
4. "External microphone, headset plug in for Audio Technica ATH-M50X"
5. "Ars Techica AT2020"
6. "Jabra Evolve 30 II"
7. "microphone in earbuds"
8. "external"
9. "Apple earbuds"
10. "no" (i.e., the participant does not know the microphone model)

Appendix 3 – Additional statistical output

Table 1 - *Output of linear mixed model evaluating Normalized F1. The reference category for Vowel is /a/, for Recording Method is In Person, for Extraction Method is Automatic, and for Stress is Stressed. * indicates p<0.05, ** p<0.01, and *** p<0.001. Blank cells in the rightmost column indicate non-significance.*

	Term	Estimate	Standard Error	*t* Statistic	*p*
1	(Intercept)	1.286	0.055	23.213	***
2	Extraction Method Supervised	-0.001	0.004	-0.261	
3	Recording Method Gorilla	-0.021	0.017	-1.206	
4	Recording Method Smartphone	-0.080	0.017	-4.752	***
5	Vowel /æ/	-0.032	0.078	-0.403	
6	Vowel /ɛ/	-0.202	0.079	-2.545	*
7	Vowel /ɪ/	-0.488	0.079	-6.199	***
8	Vowel /ʌ/	-0.133	0.078	-1.703	
9	Stress Unstressed	-0.401	0.077	-5.195	***
10	Extraction Method Supervised * Recording Method Gorilla	0.002	0.006	0.304	
11	Extraction Method Supervised * Recording Method Smartphone	0.020	0.006	3.160	**
12	Recording Method Gorilla * Vowel /æ/	-0.007	0.024	-0.274	
13	Recording Method Smartphone * Vowel /æ/	-0.004	0.024	-0.154	

14	Recording Method Gorilla * Vowel /ɛ/	0.042	0.030	1.410	
15	Recording Method Smartphone * Vowel /ɛ/	0.073	0.029	2.492	*
16	Recording Method Gorilla * Vowel /ɪ/	0.052	0.026	1.955	
17	Recording Method Smartphone * Vowel /ɪ/	0.057	0.026	2.181	*
18	Recording Method Gorilla * Vowel /ʌ/	0.011	0.021	0.492	
19	Recording Method Smartphone * Vowel /ʌ/	0.011	0.021	0.503	
20	Recording Method Gorilla * Stress Unstressed	0.054	0.014	3.774	***
21	Recording Method Smartphone * Stress Unstressed	0.064	0.014	4.571	***
22	Vowel /æ/ * Stress Unstressed	0.033	0.109	0.303	
23	Vowel /ɛ/ * Stress Unstressed	0.161	0.109	1.473	
24	Vowel /ɪ/ * Stress Unstressed	0.322	0.109	2.954	**
25	Vowel /ʌ/ * Stress Unstressed	0.077	0.109	0.705	
26	Recording Method Gorilla * Vowel /æ/ * Stress Unstressed	-0.009	0.020	-0.460	
27	Recording Method Smartphone * Vowel /æ/ * Stress Unstressed	-0.017	0.020	-0.865	
28	Recording Method Gorilla * Vowel /ɛ/ * Stress Unstressed	-0.012	0.020	-0.586	

29	Recording Method Smartphone * Vowel /ɛ/ * Stress Unstressed	-0.057	0.020	-2.886	**
30	Recording Method Gorilla * Vowel /ɪ/ * Stress Unstressed	-0.027	0.020	-1.333	
31	Recording Method Smartphone * Vowel /ɪ/ * Stress Unstressed	-0.060	0.020	-3.044	**
32	Recording Method Gorilla * Vowel /ʌ/ * Stress Unstressed	0.006	0.020	0.320	
33	Recording Method Smartphone * Vowel /ʌ/ * Stress Unstressed	0.009	0.020	0.471	

Table 2 - *Output of linear mixed model evaluating Normalized F2. The reference category for Vowel is /a/, for Recording Method is In Person, for Extraction Method is Automatic, and for Stress is Stressed. * indicates $p < 0.05$, ** $p < 0.01$, and *** $p < 0.001$. Blank cells in the rightmost column indicate non-significance.*

	Term	Estimate	Standard Error	*t* Statistic	*p*
1	(Intercept)	1.730	0.040	43.360	***
2	Extraction Method Supervised	0.004	0.013	0.285	
3	Recording Method Gorilla	0.057	0.025	2.293	*
4	Recording Method Smartphone	0.027	0.025	1.089	
5	Vowel /æ/	0.301	0.054	5.600	***
6	Vowel /ɛ/	0.375	0.055	6.813	***
7	Vowel /ɪ/	0.461	0.056	8.300	***
8	Vowel /ʌ/	0.107	0.054	1.966	
9	Stress Unstressed	0.289	0.052	5.523	***

10	Extraction Method Supervised * Recording Method Gorilla	-0.002	0.019	-0.128	
11	Extraction Method Supervised * Recording Method Smartphone	0.025	0.018	1.331	
12	Extraction Method Supervised * Vowel /æ/	0.005	0.018	0.291	
13	Extraction Method Supervised * Vowel /ɛ/	-0.004	0.018	-0.238	
14	Extraction Method Supervised * Vowel /ɪ/	0.001	0.018	0.077	
15	Extraction Method Supervised * Vowel /ʌ/	-0.008	0.018	-0.429	
16	Recording Method Gorilla * Vowel /æ/	-0.002	0.025	-0.081	
17	Recording Method Smartphone * Vowel /æ/	0.021	0.024	0.851	
18	Recording Method Gorilla * Vowel /ɛ/	-0.077	0.030	-2.565	*
19	Recording Method Smartphone * Vowel /ɛ/	-0.040	0.030	-1.328	
20	Recording Method Gorilla * Vowel /ɪ/	-0.055	0.032	-1.719	
21	Recording Method Smartphone * Vowel /ɪ/	-0.051	0.032	-1.603	
22	Recording Method Gorilla * Vowel /ʌ/	-0.081	0.027	-3.006	**
23	Recording Method Smartphone * Vowel /ʌ/	-0.075	0.027	-2.824	**

24	Extraction Method Supervised * Stress Unstressed	-0.004	0.018	-0.212	
25	Recording Method Gorilla * Stress Unstressed	-0.106	0.019	-5.684	***
26	Recording Method Smartphone * Stress Unstressed	-0.067	0.018	-3.682	***
27	Vowel /æ/ * Stress Unstressed	-0.228	0.074	-3.083	**
28	Vowel /ɛ/ * Stress Unstressed	-0.290	0.074	-3.906	***
29	Vowel /ɪ/ * Stress Unstressed	-0.313	0.074	-4.225	***
30	Vowel /ʌ/ * Stress Unstressed	-0.136	0.074	-1.829	
31	Extraction Method Supervised * Recording Method Gorilla * Vowel /æ/	0.007	0.026	0.251	
32	Extraction Method Supervised * Recording Method Smartphone * Vowel /æ/	0.013	0.026	0.520	
33	Extraction Method Supervised * Recording Method Gorilla * Vowel /ɛ/	0.010	0.026	0.396	
34	Extraction Method Supervised * Recording Method Smartphone * Vowel /ɛ/	-0.009	0.026	-0.363	
35	Extraction Method Supervised * Recording Method Gorilla * Vowel /ɪ/	0.018	0.026	0.674	
36	Extraction Method Supervised * Recording Method Smartphone * Vowel /ɪ/	0.013	0.026	0.501	

37	Extraction Method Supervised * Recording Method Gorilla * Vowel /ʌ/	-0.003	0.027	-0.123	
38	Extraction Method Supervised * Recording Method Smartphone * Vowel /ʌ/	0.023	0.026	0.873	
39	Extraction Method Supervised * Recording Method Gorilla * Stress Unstressed	0.025	0.026	0.942	
40	Extraction Method Supervised * Recording Method Smartphone * Stress Unstressed	0.029	0.026	1.112	
41	Extraction Method Supervised * Vowel /æ/ * Stress Unstressed	-0.007	0.026	-0.281	
42	Extraction Method Supervised * Vowel /ɛ/ * Stress Unstressed	0.002	0.026	0.070	
43	Extraction Method Supervised * Vowel /ɪ/ * Stress Unstressed	-0.005	0.026	-0.187	
44	Extraction Method Supervised * Vowel /ʌ/ * Stress Unstressed	0.006	0.026	0.239	
45	Recording Method Gorilla * Vowel /æ/ * Stress Unstressed	0.007	0.026	0.274	
46	Recording Method Smartphone * Vowel /æ/ * Stress Unstressed	0.014	0.026	0.556	
47	Recording Method Gorilla * Vowel /ɛ/ * Stress Unstressed	0.087	0.026	3.315	***
48	Recording Method Smartphone * Vowel /ɛ/ * Stress Unstressed	0.090	0.026	3.501	***

49	Recording Method Gorilla * Vowel /ɪ/ * Stress Unstressed	0.078	0.026	2.978	**
50	Recording Method Smartphone * Vowel /ɪ/ * Stress Unstressed	0.071	0.026	2.764	**
51	Recording Method Gorilla * Vowel /ʌ/ * Stress Unstressed	0.104	0.026	3.942	***
52	Recording Method Smartphone * Vowel /ʌ/ * Stress Unstressed	0.075	0.026	2.929	**
53	Extraction Method Supervised * Recording Method Gorilla * Vowel /æ/ * Stress Unstressed	0.011	0.037	0.301	
54	Extraction Method Supervised * Recording Method Smartphone * Vowel /æ/ * Stress Unstressed	-0.042	0.037	-1.157	
55	Extraction Method Supervised * Recording Method Gorilla * Vowel /ɛ/ * Stress Unstressed	-0.004	0.037	-0.114	
56	Extraction Method Supervised * Recording Method Smartphone * Vowel /ɛ/ * Stress Unstressed	-0.035	0.036	-0.963	
57	Extraction Method Supervised * Recording Method Gorilla * Vowel /ɪ/ * Stress Unstressed	-0.015	0.037	-0.391	
58	Extraction Method Supervised * Recording Method Smartphone * Vowel /ɪ/ * Stress Unstressed	-0.023	0.036	-0.627	
59	Extraction Method Supervised * Recording Method Gorilla * Vowel /ʌ/ * Stress Unstressed	-0.011	0.037	-0.298	

| 60 | Extraction Method Supervised * Recording Method Smartphone * Vowel /ʌ/ * Stress Unstressed | -0.021 | 0.036 | -0.580 | |

Table 3 - *Output of linear mixed model evaluating Euclidean Distance between stressed vowels and their unstressed counterparts. The reference category for Vowel is /ɑ/, for Recording Method is In Person, and for Extraction Method is Automatic. * indicates p<0.05, ** p<0.01, and *** p<0.001. NS indicates non-significant.*

	Term	Estimate	Standard Error	t Statistic	p
1	(Intercept)	.515	.069	7.481	***
2	Vowel /æ/	-.101	.094	-1.080	NS
3	Vowel /ɛ/	-.253	.094	-2.698	*
4	Vowel /ɪ/	-.370	.094	-3.957	***
5	Vowel /ʌ/	-.130	.094	-1.384	NS
6	Recording Method Gorilla	-.082	.029	-2.799	**
7	Recording Method Smartphone	-.047	.029	-1.607	NS
8	Extraction Method Supervised	-.009	.005	-2.080	*
9	Vowel /æ/ * Recording Method Gorilla	.040	.018	2.287	*
10	Vowel /ɛ/ * Recording Method Gorilla	.061	.018	3.486	***
11	Vowel /ɪ/ * Recording Method Gorilla	.074	.018	4.215	***

12	Vowel /ʌ/ * Recording Method Gorilla	.043	.018	2.416	*
13	Vowel /æ/ * Recording Method Smartphone	.028	.017	1.622	NS
14	Vowel /ɛ/ * Recording Method Smartphone	.074	.017	4.312	***
15	Vowel /ɪ/ * Recording Method Smartphone	.070	.017	4.034	***
16	Vowel /ʌ/ * Recording Method Smartphone	.033	.017	1.916	NS