

Appendix E

Processed data for sub-aim two to determine the context (L1NR, L1FR, L2NR or L2FR) in which each experimental subject differed most from the normal group

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Assigned values of one to four indicative of the extent each pathologic subject differed from the normal group across the four contexts regarding *vowel duration* for individual utterances in the *voiceless plosive utterance group*

	AOS1				AOS2				AOS3				PP1				PP2				PP3			
	L1		L2		L1		L2		L1		L2		L1		L2		L1		L2		L1		L2	
	NR	FR	NR	FR	NR	FR	NR	FR	NR	FR	NR	FR	NR	FR	NR	FR	NR	FR	NR	FR	NR	FR	NR	FR
“pak”/puck	3	1	4	2	2	1	4	3	1	2	4*	3*	2	1	3*	4*	3*	1	4*	2	2	1	4	3
“pet”/pet	4	2	3	1	4	2	3	1	1	3	4	2	4*	1	3*	2*	4*	2	3*	1	4	2	3	1
“pit”/pit	4	2	3	1	1	2	3*	4*	1	2	4	3	4*	3*	1*	2*	2	1	3	4	3	2	4	1
“pad”/putt	3	1	4	2	3	1	4	2	3	2	4	1	2*	1*	4*	3*	3*	2	4*	1	3	1	4	2
“pap”/pup	4*	2	3	1	3	2	4	1	3	2	4*	1	1*	4*	3*	2*	4*	3*	2*	1	3	2	4	1

A value of one indicates that the difference in duration between the subject and the normal group was the greatest, whereas a value of four indicates the difference was the least.

* The duration of the experimental subject was shorter than that of the normal group

The percentage of utterances in each context for the *voiceless plosive utterance group* which were assigned a value of one, for determination of the context where the difference between the *vowel duration* of each pathologic subject and the normal group was generally the greatest

	L1NR (%)	L1FR (%)	L2NR (%)	L2FR (%)	Context with the largest percentage of utterances assigned a value of one
AOS1	0	40	0	60	L2FR
AOS2	20	40	0	40	L1FR and L2FR
AOS3	60	0	0	40	L1NR
PP1	20	60	20	0	L1FR
PP2	0	40	0	60	L2FR
PP3	0	40	0	60	L2FR

Assigned values of one to four indicative of the extent each pathologic subject differed from the normal group across the four contexts regarding *vowel duration* for individual utterances in the *voiced plosive utterance group*

	AOS1				AOS2				AOS3				PP1				PP2				PP3			
	L1		L2		L1		L2		L1		L2		L1		L2		L1		L2		L1		L2	
	NR	FR	NR	FR	NR	FR	NR	FR	NR	FR	NR	FR	NR	FR	NR	FR	NR	FR	NR	FR	NR	FR	NR	FR
“byt”/bait	4	3	2	1	3	2	4	1	3	2	4	1	4*	3*	2*	1*	3	1	4	2	3*	2	4*	1
“bak”/buck	4*	2	3*	1	1	2	4	3	1	4	2	3	1	2*	3*	4*	2*	3*	4*	1	2	1	4*	3
“bas”/bus	4*	3	2	1	4	2	3	1	1	2	3	4	2	3*	1	4*	3*	2	4*	1	4	2	3	1
“bek”/back	4*	1	3	2	3	2	4	1	2	1	4	3	3	4*	1	2	4*	2*	3*	1	4	3	2	1
“bed”/bet	3	1	4	2	3	2	4	1	2	3	4	1	3*	1	4*	2	4*	2*	3*	1	3	2	4	1

A value of one indicates that the difference in duration between the subject and the normal group was the greatest, whereas a value of four indicates the difference was the least.

* The duration of the experimental subject was shorter than that of the normal group

The percentage of utterances in each context for the *voiced plosive utterance group* which were assigned a value of one, for determination of the context where the difference between the *vowel duration* of each pathologic subject and the normal group was generally the greatest

	L1NR (%)	L1FR (%)	L2NR (%)	L2FR (%)	Context with the largest percentage of utterances assigned a value of one
AOS1	0	40	0	60	L2FR
AOS2	20	0	0	80	L2FR
AOS3	40	20	0	40	L1NR and L2FR
PP1	20	20	40	20	L2NR
PP2	0	20	0	80	L2FR
PP3	0	20	0	80	L2FR

Assigned values of one to four indicative of the extent each pathologic subject differed from the normal group across the four contexts regarding *vowel duration* for individual utterances in the *voiceless fricative utterance group*

	AOS1				AOS2				AOS3				PP1				PP2				PP3			
	L1		L2		L1		L2		L1		L2		L1		L2		L1		L2		L1		L2	
	NR	FR	NR	FR	NR	FR	NR	FR	NR	FR	NR	FR	NR	FR	NR	FR	NR	FR	NR	FR	NR	FR	NR	FR
“set”/set	4	2	3	1	1	4	2	3	1	4	2	3	4*	1*	2*	3*	4*	2	3	1	4	2	3	1
“vas”/fuss	3	1	4	2	4	2	3	1	1	3	2	4	1	4*	2	3	3	2	4	1	4	2	3	1
“feit”/fête	4	3	2	1	3	2	4	1	3	2	4	1	4*	2*	1*	3*	4	2	3	1	3*	1	4*	2
“voet”/foot	3	2	4	1	2	1	4*	3	1	2	4*	3*	4*	3*	2	1	2	1	4	3	3	1	4*	2

A value of one indicates that the difference in duration between the subject and the normal group was the greatest, whereas a value of four indicates the difference was the least.

*The duration of the experimental subject was shorter than that of the normal group

The percentage of utterances in each context for the *voiceless fricative utterance group* which were assigned a value of one, for determination of the context where the difference between the *vowel duration* of each pathologic subject and the normal group was generally the greatest

	L1NR (%)	L1FR (%)	L2NR (%)	L2FR (%)	Context with the largest percentage of utterances assigned a value of one
AOS1	0	25	0	75	L2FR
AOS2	25	25	0	50	L2FR
AOS3	75	0	0	25	L1NR
PP1	25	25	25	25	All four contexts are equal
PP2	0	25	0	75	L2FR
PP3	0	50	0	50	L1FR and L2FR

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Assigned values of one to four indicative of the extent each experimental subject differed from the normal group across the four contexts regarding *utterance duration* for individual utterances in the *voiceless plosive utterance group*

	AOS1				AOS2				AOS3				PP1				PP2				PP3			
	L1		L2		L1		L2		L1		L2		L1		L2		L1		L2		L1		L2	
	NR	FR	NR	FR	NR	FR	NR	FR	NR	FR	NR	FR	NR	FR	NR	FR	NR	FR	NR	FR	NR	FR	NR	FR
“pak”/puck	3	2	4	1	1	4	3	2	2*	1	4*	3*	3	1	4*	2	2	3	4	1	2	1	4	3
“pet”/pet	4	3	1	2	1	4	3	2	1*	4*	2*	3*	2	1	4	3	3	1	4	1	4	2	3	1
“pit”/pit	1	3	4	2	1	3	4	2	1	2*	3*	4*	2	3	4*	1	3	2	4	2	3	2	4	1
“pad”/putt	3	1	4	2	2	4	3	1	4*	2	3	1	1	2	3	4	4	3	2	1	3	2	4	1
“pap”/pup	4	2	3	1	1	3	2	4	4*	2	3*	1	2	1	3	4*	3	2	4	1	2	1	4*	3

A value of one indicates that the difference in duration between the subject and the normal group was the greatest, whereas a value of four indicates the difference was the least.

* The duration of the experimental subject was shorter than that of the normal group.

The percentage of utterances in each context for the *voiceless plosive utterance group* which were assigned a value of one, for determination of the context where the difference between the *utterance duration* of each experimental subject and the normal group was generally the greatest

	L1NR (%)	L1FR (%)	L2NR (%)	L2FR (%)	Context with the largest percentage of utterances assigned a value of one
AOS1	20	20	20	40	L2FR
AOS2	80	0	0	20	L1NR
AOS3	40	20	0	40	L1NR and L2FR
PP1	20	60	0	20	L1FR
PP2	0	20	0	80	L2FR
PP3	0	40	0	60	L2FR

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Assigned values of one to four indicative of the extent each experimental subject differed from the normal group across the four contexts regarding *utterance duration* for individual utterances in the *voiced plosive utterance group*

	AOS1				AOS2				AOS3				PP1				PP2				PP3			
	L1		L2		L1		L2		L1		L2		L1		L2		L1		L2		L1		L2	
	NR	FR	NR	FR	NR	FR	NR	FR	NR	FR	NR	FR	NR	FR	NR	FR	NR	FR	NR	FR	NR	FR	NR	FR
“byt”/bait	4	3	2	1	1	4	3	2	2	1	4*	3*	1	2	4	3	4	2	3	1	3	1	2	4
“bak”/buck	4	2	3	1	1/2	4	1/2	3	1	3*	4*	2*	2	1	3	4*	4	2	3	1	4	2	3	1
“bas”/bus	4	2	3	1	1	2	3	4	2	3	4*	1	3*	2	4*	1	4	3	2	1	3	2	4	1
“bek”/back	4	2	3	1	2	3	4	1	4*	1	3*	2	1	2	4	3	3	2	4	1	4	2	3	1
“bed”/bet	3	4	2	1	1	3	4	2	1	2*	4*	3*	1	2	4*	3	3	2	4	1	3	2	4	1

A value of one indicates that the difference in duration between the subject and the normal group was the greatest, whereas a value of four indicates the difference was the least.
 * The duration of the experimental subject was shorter than that of the normal group.

The percentage of utterances in each context for the *voiced plosive utterance group* which were assigned a value of one, for determination of the context where the difference between the *utterance duration* of each experimental subject and the normal group was generally the greatest

	L1NR (%)	L1FR (%)	L2NR (%)	L2FR (%)	Context with the largest percentage of utterances assigned a value of one
AOS1	0	0	0	100	L2FR
AOS2	80	0	20	20	L1NR
AOS3	40	40	0	20	L1NR and L1FR
PP1	60	20	0	20	L1NR
PP2	0	0	0	100	L2FR
PP3	0	20	0	80	L2FR

Assigned values of one to four indicative of the extent each experimental subject differed from the normal group across the four contexts regarding *utterance duration* for individual utterances in the *voiceless fricative utterance group*

	AOS1				AOS2				AOS3				PP1				PP2				PP3			
	L1		L2		L1		L2		L1		L2		L1		L2		L1		L2		L1		L2	
	NR	FR	NR	FR	NR	FR	NR	FR	NR	FR	NR	FR	NR	FR	NR	FR	NR	FR	NR	FR	NR	FR	NR	FR
“set”/set	4	2	3	1	1	3	4	2	3	4	1	2	1	3	4*	2	4	2	3	1	3	2	4*	1
“vas”/fuss	4	2	3	1	3	2	4	1	4*	2	3	1	3	2	4	1	4	2	3	1	3	2	4*	1
“feit”/fête	3	2	4	1	4	2	3	1	3	2	4*	1	1	2	3	4*	3	2	4	1	3*	1	4*	2
“voet”/foot	3	2	3	1	1	3	4	2	3	2	4*	1	3	2	4	1	4	1	3	2	4*	2	3	1

A value of one indicates that the difference in duration between the subject and the normal group was the greatest, whereas a value of four indicates the difference was the least.

*The duration of the experimental subject was shorter than that of the normal group.

The percentage of utterances in each context for the *voiceless fricative utterance group* which were assigned a value of one, for determination of the context where the difference between the *utterance duration* of each experimental subject and the normal group was generally the greatest

	L1NR (%)	L1FR (%)	L2NR (%)	L2FR (%)	Context with the largest percentage of utterances assigned a value of one
AOS1	0	0	0	100	L2FR
AOS2	50	0	0	50	L1NR and L2FR
AOS3	0	0	25	75	L2FR
PP1	50	0	0	50	L1NR and L2FR
PP2	0	25	0	75	L2FR
PP3	0	25	0	75	L2FR

Assigned values of one to four indicative of the extent each experimental subject differed from the normal group across the four contexts regarding *utterance onset duration* for individual utterances in the *voiceless plosive utterance group*

	AOS1				AOS2				AOS3				PP1				PP2				PP3			
	L1		L2		L1		L2		L1		L2		L1		L2		L1		L2		L1		L2	
	NR	FR	NR	FR	NR	FR	NR	FR	NR	FR	NR	FR	NR	FR	NR	FR	NR	FR	NR	FR	NR	FR	NR	FR
“pak”/puck	4	1	3	2	3	2	4	1	1	3	4	2	4	2	1	3	1	4	3	2	4*	3*	2	1
“pet”/pet	3	4	2	1	2	3	4	1	3	4	2	1	3	4	1	2	4*	2	3	1	3*	1*	4*	2*
“pit”/pit	4	2	3	1	4	3	2	1	1	3	4	2	1	4	3	2	3	2	4	1	3*	2*	4*	1*
“pad”/putt	4	3	2	1	2	3	4	1	3	1	4	2	1	4*	2	3	4	2	3	1	2*	3*	4*	1
“pap”/pup	4	1	3	2	4	1	2	3	1	2	4	3	1	3	2	4	3	2	4*	1	1	2*	4*	3*

A value of one indicates that the difference in duration between the subject and the normal group was the greatest, whereas a value of four indicates the difference was the least.

* The duration of the experimental subject was shorter than that of the normal group.

The percentage of utterances in each context for the *voiceless plosive utterance group* which were assigned a value of one, for determination of the context where the difference between the *utterance onset duration* of each experimental subject and the normal group was generally the greatest

	L1NR (%)	L1FR (%)	L2NR (%)	L2FR (%)	Context with the largest percentage of utterances assigned a value of one
AOS1	0	40	0	60	L2FR
AOS2	0	20	0	80	L2FR
AOS3	60	20	0	20	L1NR
PP1	60	0	40	0	L1NR
PP2	20	0	0	80	L2FR
PP3	20	20	0	60	L2FR

Assigned values of one to four indicative of the extent each experimental subject differed from the normal group across the four contexts regarding *utterance onset duration* for individual utterances in the *voiced plosive utterance group*

	AOS1				AOS2				AOS3				PP1				PP2				PP3			
	L1		L2		L1		L2		L1		L2		L1		L2		L1		L2		L1		L2	
	NR	FR	NR	FR	NR	FR	NR	FR	NR	FR	NR	FR	NR	FR	NR	FR	NR	FR	NR	FR	NR	FR	NR	FR
“byt”/bait	3	4	2	1	2	1	4	3	2	4	3	1	3	4	1	2	4	3	2	1	2	3*	4*	1
“bak”/buck	4	3	1	2	3	4	2	1	1	2	3	4	3	4	2	1	3	2	4	1	2*	1	4*	3*
“bas”/bus	2	1	3	4	2	1	4	3	3	2	4	1	1	4	3	2	1	2	3	4	2*	3*	4*	1
“bek”/back	3	4	2	1	4	3	1	2	2	4	3	1	4	1	3	2	3	1	4*	2	1	2*	4*	3*
“bed”/bet	4	3	1	2	2	1	4	3	3	1	4	2	2	4*	1	3	4*	1	3*	2	4*	3	1	2

A value of one indicates that the difference in duration between the subject and the normal group was the greatest, whereas a value of four indicates the difference was the least

* The duration of the experimental subject was shorter than that of the normal group.

The percentage of utterances in each context for the *voiced plosive utterance group* which were assigned a value of one, for determination of the context where the difference between the *utterance onset duration* of each experimental subject and the normal group was generally the greatest

	L1NR (%)	L1FR (%)	L2NR (%)	L2FR (%)	Context with the largest percentage of utterances assigned a value of one
AOS1	0	20	40	40	L2NR and L2FR
AOS2	0	60	20	20	L1FR
AOS3	20	20	0	60	L2FR
PP1	20	20	40	20	L2NR
PP2	20	40	0	40	L1FR and L2FR
PP3	20	20	20	40	L2FR

Assigned values of one to four indicative of the extent each experimental subject differed from the normal group across the four contexts regarding *voice onset time* for individual utterances in the *voiceless plosive utterance group*

	AOS1				AOS2				AOS3				PP1				PP2				PP3			
	L1		L2		L1		L2		L1		L2		L1		L2		L1		L2		L1		L2	
	NR	FR	NR	FR	NR	FR	NR	FR	NR	FR	NR	FR	NR	FR	NR	FR	NR	FR	NR	FR	NR	FR	NR	FR
“pak”/puck	4	2	3	1	3	2	4*	1	4*	3*	1	2	1	4	3	2	1	3	4	2	3	2	4*	1
“pet”/pet	1	4	3	2	1*	2*	3*	4*	3	4*	2	1	3	2	1	4	1	3	4*	2	1	2	3	4
“pit”/pit	4	1	3	2	2	1	4	3	3	4*	1	2	1	2	4	3	3	4*	2	1	4*	2	3*	1
“pad”/putt	4	3	2	1	2	1	3	4*	4*	2	1	3	2	4	1	3	1	3	4*	2	2	1	4*	3*
“pap”/pup	4	2	3	1	1	2	4*	3*	2	4*	1	3	4	2	1	3	3	2	4*	1	1	3*	2*	4*

A value of one indicates that the difference in duration between the subject and the normal group was the greatest, whereas a value of four indicates the difference was the least.

* The duration of the experimental subject was shorter than that of the normal group.

The percentage of utterances in each context for the *voiceless plosive utterance group* which were assigned a value of one, for determination of the context where the difference between the *voice onset time* of each experimental subject and the normal group was generally the greatest

	L1NR (%)	L1FR (%)	L2NR (%)	L2FR (%)	Context with the largest percentage of utterances assigned a value of one
AOS1	20	20	0	60	L2FR
AOS2	40	40	0	20	L1NR and L1FR
AOS3	0	0	80	20	L2NR
PP1	40	0	60	0	L2NR
PP2	60	0	0	40	L1NR
PP3	40	20	0	40	L1NR and L2FR