

## Appendix A: Dutch and English vowel inventories

Both Dutch and English have rich vowel inventories with, depending on the variety, about 12 monophthongs, excluding schwa, in Dutch and 11 in English. In addition, Dutch typically has three and English seven diphthongs. Appendix Table 1 presents the steady-state vowel inventories of Standard (Belgian) Dutch (Verhoeven, 2005) and British English (Ladefoged, 1982).

Table A. Monophthong vowel inventories in Dutch and English.

Standard (Belgian) Dutch vowels (Verhoeven, 2005)		Standard (Southern) British English (RP) (Ladefoged, 1982)	
ɪ	lip ('lip')	ɪ	bit
i:	liep ('ran')	i:	beat
ɛ	les ('lesson')	ɛ	bet
e	lees ('(I) read')	æ	bat
ɑ	rap ('quick')	ɑ	father
a	raap ('turnip')	ɒ	bother
ɔ	lot ('fate')	ɔ	bought
o	lood ('lead')	ɜ	nurse

ʏ	buk ('(I) bend over')	ʌ	but
u	boek ('book')	u	boot
y	duur ('expensive')	ʊ	put
∅	deur 'door'		

References:

Ladefoged, P. (1982). *A course in phonetics*. New York: Harcourt Brace Jovanovich.

Verhoeven, J. (2005). Illustrations of the IPA: Belgian Standard Dutch. *Journal of the International Phonetic Association*, 35, 243–247.

**Appendix B: Receptive vocabulary test**

In order to ensure that the words used in the English lexical decision task were part of the children's lexicon, a pre-test was carried out in which the children's receptive knowledge of English words was tested. On the basis of this pretest, the stimuli for the English lexical decision task (Experiment 2) were selected.

**Materials**

*Auditory stimuli*

The stimuli were 64 monosyllabic English words containing 8 English vowels (8 vowels\*8 tokens), namely /ɪ, ε, ʏ, y, ɔ, u, o, i/. These vowels were selected since they were the focus of lexical decision Experiment 2 (see Section 2.2).

Table B. *Stimuli in the receptive vocabulary test.*

i	ɛ	æ	ɒ	u	ʊ	ɔ	i
fish	bed	cat	dog	moon	book	ball	sheep
pig	bread	crab	sock	shoe	foot	four	three
kiss	neck	hand	swan	two	good	door	green
pink	pen	hat	box	fruit	cook	fork	knee
lip	ten	rat	cross	blue	push	floor	cheese
chin	red	bag	frog	pool	wood	horse	beach
ship	head	black	rock	room	hook	talk	sweets
think	leg	pants	doll	spoon	pull	tall	teeth

*Visual stimuli:*

All pictures were black-and-white line drawings, except for pictures of color words which were presented as colored squares. Most pictures were taken from the Ghent University

Experimental Psychology picture database; if the picture was not available in this database it was either drawn for the purpose of this experiment (e.g. number words) or taken from the web and adjusted in size and color.

### ***Procedure***

In the receptive vocabulary test, three pictures of objects and a question mark appeared on the screen and one word was aurally presented to the participants over headphones. The two non-target pictures represented words belonging to the same semantic field as the target item (the target picture of a 'chin' was, for instance, presented with pictures of a nose and an eye.)

Participants were instructed to press the leftmost button, above which the number '1' was written, on an RB-730 response pad if the word corresponded to the leftmost picture, button '2' to it if the word corresponded to the second picture and button '3' if it corresponded to the third picture. They were instructed to press the rightmost button above which a question mark was written when they did not know what the correct answer was.

### ***Design***

The experiment was supported by SuperLab 4.0. After the instructions and two test trials there were four blocks of 16 trials each, separated by optional breaks. Trials were automatically randomized for each listener within each block.

### ***Results***

The results of the vocabulary test revealed that 17 out of 64 words were correctly identified by all 26 participants; 18 words were correctly matched to the corresponding picture by more than 90% of the participants (24 or 25/26) and 10 words were correctly identified by more than 80% of the listeners (21 to 23/26). Since the words which were correctly identified by all participants were not evenly spread over the 8 vowels (e.g. there was only 1 word with /i/

which got a 100% correct score vs. 5 words with /ɛ/, it was decided for each vowel to select the words that were correctly identified by at least 80% of the listeners. Since there were only 4 words with the vowel /ʊ/ and 4 with the vowel /ɒ/ which were correctly identified by at least 80% of the listeners, only 4 words containing each of 4 vowels were included in the MP detection task of Experiment 2. These are presented in Appendix Table 3.

Table C. *Number (and proportion) of correct responses in the receptive vocabulary test.*

vowel	word	correct (%)	vowel	word	correct (%)
/ɪ/	fish	26 (100 %)	/ʊ/	book	26 (100 %)
	pig	25 (96 %)		foot	26 (100 %)
	kiss	24 (92%)		good	24 (92%)
	pink	24 (92%)		cook	22 (85%)
/ɛ/	bed	26 (100 %)	/u/	moon	26 (100 %)
	bread	26 (100 %)		shoe	26 (100 %)
	neck	26 (100 %)		two	26 (100 %)
	pen	26 (100 %)		fruit	25 (96 %)
/æ/	cat	26 (100 %)	/ɔ/	ball	26 (100 %)
	crab	26 (100 %)		four	26 (100 %)
	hand	26 (100 %)		door	25 (96 %)

	hat	24 (92%)		fork	25 (96 %)
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/b/	dog	26 (100 %)	/i/	sheep	25 (96 %)
	sock	26 (100 %)		three	25 (96 %)
	swan	23 (89%)		green	25 (96 %)
	box	21 (81%)		knee	25 (96 %)

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In the analysis of this MP detection task, all tokens which were not or incorrectly identified by individual children were removed from these children's result sets.