**Table S1**

*Levels of mastery in form-meaning link (Laufer & Goldstein, 2004; Schmitt, 2010)*

|  |  |  |  |
| --- | --- | --- | --- |
| Aspect of word knowledge | Test format | Task | Example |
| Given | Tested |
| Form | Meaning | Recognition | Select definition or translation in L1 | cat:1. *kucing*
2. *anjing*
3. *tikus*
4. *burung*
 |
| Meaning | Recall | Supply definition or translation in L1 | cat: *k*\_\_\_\_\_\_\_\_\_\_ |
| Meaning | Form | Recognition | Select word in L2 | *kucing:*1. cat
2. dog
3. mouse
4. bird
 |
| Form | Recall | Supply word in L2 | *kucing:* c\_\_\_\_\_\_\_\_\_\_ |

*Note.* Adapted from Schmitt (2010). The degree of form-meaning knowledge is labelled by matching the aspect of word knowledge being tested with the relevant test format, e.g., meaning recognition. The examples are written using Malay as L1, and English as L2.

**Table S2**

*Distribution of target words across frequency bands (in Zipf values)*

|  |  |
| --- | --- |
| Frequency band | Total number of words |
| Noun | Verb | Adjective |
| Zipf < 3.0 | 5 | 4 | 3 |
| 3.0 ≤ Zipf < 3.5 | 11 | 4 | 3 |
| 3.5 ≤ Zipf < 4.0 | 8 | 5 | 1 |
| 4.0 ≤ Zipf < 5.0 | 7 | 4 | 5 |

*Note.* Word frequency of LexMAL items were obtained from Yap et al. (2010) and converted to Zipf values (van Heuven et al., 2014) for a more intuitive interpretation. The tipping point from low frequency to high frequency words is between 3.5 to 4 (van Heuven et al., 2014).

**Table S3**

*Distribution of lexical characteristics across wordlists*

|  |  |  |
| --- | --- | --- |
| Word class | Wordlist A | Wordlist B |
| *N* | Word frequency | Word length | *N* | Word frequency | Word length |
| Noun | 16 | 3.55 (0.57) | 7.06 (2.11) | 15 | 3.58 (0.55) | 7.13 (2.77) |
| Verb | 8 | 3.49 (0.52) | 8.13 (2.95) | 9 | 3.54 (0.53) | 9.11 (2.93) |
| Adjective | 6 | 3.52 (0.58) | 6.00 (1.26) | 6 | 3.73 (0.67) | 5.67 (0.82) |

*Note.* Word frequency was in Zipf value (van Heuven et al., 2014).

**Table S4**

*Results of fixed-effects regression analysis*

|  |  |  |  |
| --- | --- | --- | --- |
| Variable | *R*2 (adjusted *R*2) | Estimate (*SE*) | *t* value |
| Step 1 | 0.53 (0.52) |  |  |
| Meaning Recognition |  | 1.12 (0.08) | 13.22\*\*\* |
| Step 2 | 0.57 (0.56)\*\*\* |  |  |
| Meaning Recognition |  | 0.60 (0.16) | 3.82\*\*\* |
| Form Recognition |  | 0.81 (0.21) | 3.89\*\*\* |
| Step 3 | 0.59 (0.59)\*\*\* |  |  |
| Meaning Recognition |  | 0.47 (0.16) | 2.98\*\* |
| Form Recognition |  | 0.72 (0.20) | 3.55\*\*\* |
| Meaning Recall |  | 0.34 (0.10) | 3.20\*\* |
| Step 4 | 0.59 (0.58) |  |  |
| Meaning Recognition |  | 0.46 (0.16) | 2.90\*\* |
| Form Recognition |  | 0.71 (0.21) | 3.40\*\*\* |
| Meaning Recall |  | 0.32 (0.12) | 2.63\*\* |
| Form Recall |  | 0.04 (0.14) | 0.31 |

*Note*. \*\*\* *p* < .001, \*\* *p* < .01.

**Table S5**

*Summary of estimated marginal means (EMM) and standard errors (SE) for each pairwise combination between language group, Meaning Recall and Form Recall*

|  |  |
| --- | --- |
| Pairwise comparison | Language group |
| Malay L1 (*N* = 80) | Malay L2 (*N* = 80) |
| *EMM* *(odds ratio)* | *SE* | *EMM* *(odds ratio)* | *SE* |
| Meaning Recall |  |  |  |  |
| Target | 0.14 | 0.04 | 0.06 | 0.02 |
| Non-target | 0.82 | 0.03 | 0.40 | 0.05 |
| Form Recall |  |  |  |  |
| Target | 0.10 | 0.03 | 0.04 | 0.01 |
| Non-target | 0.86 | 0.03 | 0.52 | 0.06 |

*Note*. Non-target vocabulary tests include all form-meaning vocabulary tests except the target vocabulary test.

**Table S6**

*Internal reliability of the vocabulary tests*

|  |  |  |
| --- | --- | --- |
| Vocabulary Test | *N* | Cronbach’s alpha |
| LexMAL | 90 | .92 |
| Meaning Recognition A | 30 | .90  |
| Meaning Recognition B | 30 | .91 |
| Form Recognition A | 30 | .87 |
| Form Recognition B | 30 | .87 |
| Meaning Recall A | 30 | .84 |
| Meaning Recall B | 30 | .86 |
| Form Recall A | 30 | .86 |
| Form Recall B | 30 | .87 |