**Codebook Dataset “Multilingualism and cognitive performance”**

The following table lists the labels that correspond to the column numbers in the csv file “BS\_dataset.csv” (column 1), the description of these column names (column 2) and an explanation of the manner of coding the responses of the participants (column 3). The information is presented in English except for the information regarding level of education, as these levels in Dutch have no clear English equivalent. For the sake of correctness, we have adhered to the Dutch terminology here.

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| **label** | **Description** | **Code** |
| subjid | Subject ID | Created by the participant by answering 6 questions at the beginning of the questionnaire; resulting in a string with numbers and characters. |
| age | Age in years | Age in whole years |
| gender | Male or female | Male = 1, female = 2 |
| education | Level of highest completed education (in type of education, in Dutch) | 1 = less than 6 grades of primary school; 2= primary school; 3=ambachtsschool; 4=mulo/mbo; 5= hbs/gymnasium/atheneum; 6=university/higher education |
| income | Income level per month | 1 = no income; 2= up to 500; 3= 500-1000; 4=100-1500; 5=1500-2000; 6=2000-2500; 7=2500-3000; 8=3000 or more; 9=don’t know/don’t want to give this information |
| selfphealth | Self-reported health | 1 = Excellent; 2= very good; 3= good; 4= moderate; 5=poor. |
| multimorb | Multimorbidity | Participants could choose which diseases they have (had) from a list; max =19. An increase in number of diseases (2 or more) is an increase in degree of multimorbidity. |
| QoLrapport | Quality of life (mark) | Participants rated their perceived quality of life on a scale of 1 (lowest) tot 10 (highest) |
| resilience | Degree of resilience | Index variable, calculated by averaging the responses on … |
| number\_lang | Number of languages a participant speaks/uses | Participants could list a maximum of 5 languages. These are counted. |
| profl1/profl2/profl3 | Proficiency in language 1, 2, 3 | For the first three languages, participants were asked to rate their degree of production and comprehension in each language on a scale of 1 (low) to 5 (high). These ratings are averaged for each language. |
| aoa1/aoa2/aoa3 | Age of onset of acquisition language 1, 2 and 3 | For the first three languages participants were asked at what age learning/acquisition commenced |
| contextSwitch | Degree of contextual switching | Part of the Bilingual Language Switch Questionnaire [[1]](#endnote-1), for which responses to the questions were collated (conscious contextual switching, unintended switching, and limited language control) after running a Principal Component Analysis on the answers to all questions relating to switching (oblique rotation with 3 components retained). |
| att1/att2/att3 | Attitude towards language 1, 2, 3 | Participants indicated to what extent they agreed that they like to speak the language on a scale of 1(no at all agree) to 5(wholeheartedly agree). |
| extravert/agreeableness/conscientiousness/open\_to\_experiences | The five items of the TIPI personality scale[[2]](#endnote-2) | Participants were prompted with 10 statements regarding their personality and indicated to what extent they felt the statements were applicable to them on a scale of 1 (not at all) to 7 (highly applicable). The TIPI codebook subsequently allowed us to compute the relevant statistics for each of the five personality traits. |
| emotionalWB | Emotional wellbeing | Index variable computed by averaging the responses on the following questions derived from TOPICS-MDS[[3]](#endnote-3), reverse-coded when necessary, following the instructions in the TOPICS codebook.   * feeling nervous * feeling calm * feeling down * feeling happy * feeling so down nothing can cheer you up |
| province | The province in which the participant resided | Participants provided their postal code, which were categorised into Friesland =1, Groningen =2 and Drenthe =3 |
| flanker\_rt0/rt1 | Reaction times on the Flanker task | Rt0 = incongruent condition and rt1 = congruent condition |
| flankscore | The Flanker effect score | The Flanker effect score was calculated by subtracting the congruent reaction times from the incongruent reaction times |
| wcst\_error | WCST error score | The number of persistent errors is reported (number of times a participant continues to make the same error after the rule has changed) |
| earlyLate | Early versus late onset of acquisition | The cut-off point was set at age 12. Information from the age of onset of language 1 and 2 was used. If participants acquired both lang 1 and 2 before age 12, they were considered early; lang1 before and lang2 after age 12; late. |
| langCombi and langCombiF | Language combinations (of L1 and L2 only) Adding L3 results in a variable with too many options and too low in power (too complex). | Dutch-Fries = 1, Dutch-Dialect = 2, Fries-Dutch = 3, Dialect-Dutch = 4, Dutch-Germanic = 5, Dutch-Roman = 6, Germanic-Dutch = 7, Other-Dutch = 8, Other combination= 9.  langCombi = text format  langCombiF = factor format (1-9) |
| sport | Playing sports | 1=yes, 0=no |
| instrument | Playing a musical instrument | 0=no; 1=yes, inactive; 2=yes, active |
| compLang1/2/3 | Composite score of usage of L1/2/3 across different social domains | A composite score was calculated using the function composite() from the “multicon” package in R[[4]](#endnote-4). Input were the responses to how much participants use each language in the following four domains: with family, friends, neighbours and acquaintances, on a scale of 1 (never) to 5 (always) |
| earlyLate3 | To see whether adding age of acquisition of the third language makes a difference in categorising participants as early or late bilinguals, we computed earlyLate again with L3 added. | 5 possibilities:   * aoa1, 2, 3 =< 12: 1 * aoa1, 2 =<12 & aoa3 >=12: 2 * aoa1 =< 12 & aoa2, 3 >=12: 3 * aoa1 >=12 & aoa2, 3 <= 12: 4 * else: 5 |

1. Antoni Rodriguez-Fornells et al., ‘Self-Assessment of Individual Differences in Language Switching’, *Frontiers in Psychology* 2 (10 January 2012), https://doi.org/10.3389/fpsyg.2011.00388. [↑](#endnote-ref-1)
2. S.D. Gosling, P.J. Rentfrow, and W.B. Swann, ‘A Very Brief Measure of the Big Five Personality Domains’, *Journal of Research in Personality* 37 (2003): 504–28. [↑](#endnote-ref-2)
3. Jennifer E. Lutomski et al., ‘The Development of the Older Persons and Informal Caregivers Survey Minimum DataSet (TOPICS-MDS): A Large-Scale Data Sharing Initiative’, *PLOS ONE* 8, no. 12 (4 December 2013): e81673, https://doi.org/10.1371/journal.pone.0081673. [↑](#endnote-ref-3)
4. RStudio Team, *RStudio: Integrated Development Environment for R* (Boston, MA: RStudio, Inc., 2016), http://www.rstudio.com/. [↑](#endnote-ref-4)