

# Parent Report of Children's Abilities-Revised (PARCA-R)

Resources for obtaining PARCA-R standard scores for  
large data sets: User Guide

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PARCA-R study group



## Obtaining PARCA-R standard scores for large data sets

### Please note:

This resource can be used to derive PARCA-R standard scores for large data sets for clinical use or for observational studies and clinical trials. If you are using this resource for Clinical Trials of Investigational Medicinal Products (CTIMPS), you may need to ensure its use complies with the relevant regulatory guidance. We are unable to provide further support for this.

The PARCA-R is freely available for use non-commercially for clinical and research purposes. The PARCA-R questionnaire and associated resources must not be adapted in any way and must not be used for profit. If you have any queries about the use of the PARCA-R, please email the team at [parca-r@le.ac.uk](mailto:parca-r@le.ac.uk)

### Obtaining PARCA-R standard scores:

To obtain PARCA-R standard scores for large data sets, download the standard scoring excel file from the PARCA-R website: [www.parca-r.info](http://www.parca-r.info)

To derive PARCA-R standard scores, you will need variables for the child's sex, age at assessment in months and days (i.e. age when the PARCA-R was completed), and PARCA-R raw scores.

Within your data set, generate raw scores for the PARCA-R Non-Verbal Cognitive Scale and the Language Scale using the instructions provided in the Technical and Interpretive Manual (freely available to download at [www.parca-r.info](http://www.parca-r.info)). Ensure you follow the guidance on dealing with missing data provided on pages 32-33 of the test manual when generating raw scores.

Next, split your data into groups by:

- Sex:
  - Male
  - Female, and
- Age at PARCA-R assessment:
  - 24 months: 23 months 16 days to 24 months 15 days;
  - 25 months: 24 months 16 days to 25 months 15 days;
  - 26 months: 25 months 16 days to 26 months 15 days;
  - 27 months: 26 months 16 days to 27 months 15 days.

For each sub-group, copy the column from your data set that contains information for your "Study ID" and the column that has the individual raw scores for the scale of interest (i.e. Non-Verbal Cognitive Scale or Language Scale) and paste them into the relevant cells in the PARCA-R standard scoring excel file (i.e. columns headed "StudyID" and "rawvalue") in the appropriate spreadsheet for the child's sex and age.

In each sheet, columns A-E refer to the Non-Verbal Cognitive Scale, and columns G-K refer to the Language Scale. Columns A and G (headed “Raw”) provide all the potential raw scores for the Non-Verbal Cognitive Scale and the Language Scale, respectively, with their equivalent standard scores under columns B and H (headed “Standardised”). Columns C-D and I-J are where you should paste your own data. Specifically, Columns C and I are for your own participant IDs (headed “StudyID”) and columns D and J (headed “rawvalue”) are for your own participant raw scores for the Non-Verbal Cognitive Scale and the Language Scale, respectively.

Once you paste your data into columns C-D or I-J, the corresponding standard scores will appear in the blue highlighted column E or K (headed “standvalue”) for the Non-Verbal Cognitive Scale and the Language Scale, respectively.

For example, if you want to derive standard scores for the Non-Verbal Cognitive Scale for girls aged 23 months and 16 days at the time of the assessment, use the “F\_24mo” sheet in the PARCA-R standard scoring excel file, as shown in Figure 1:

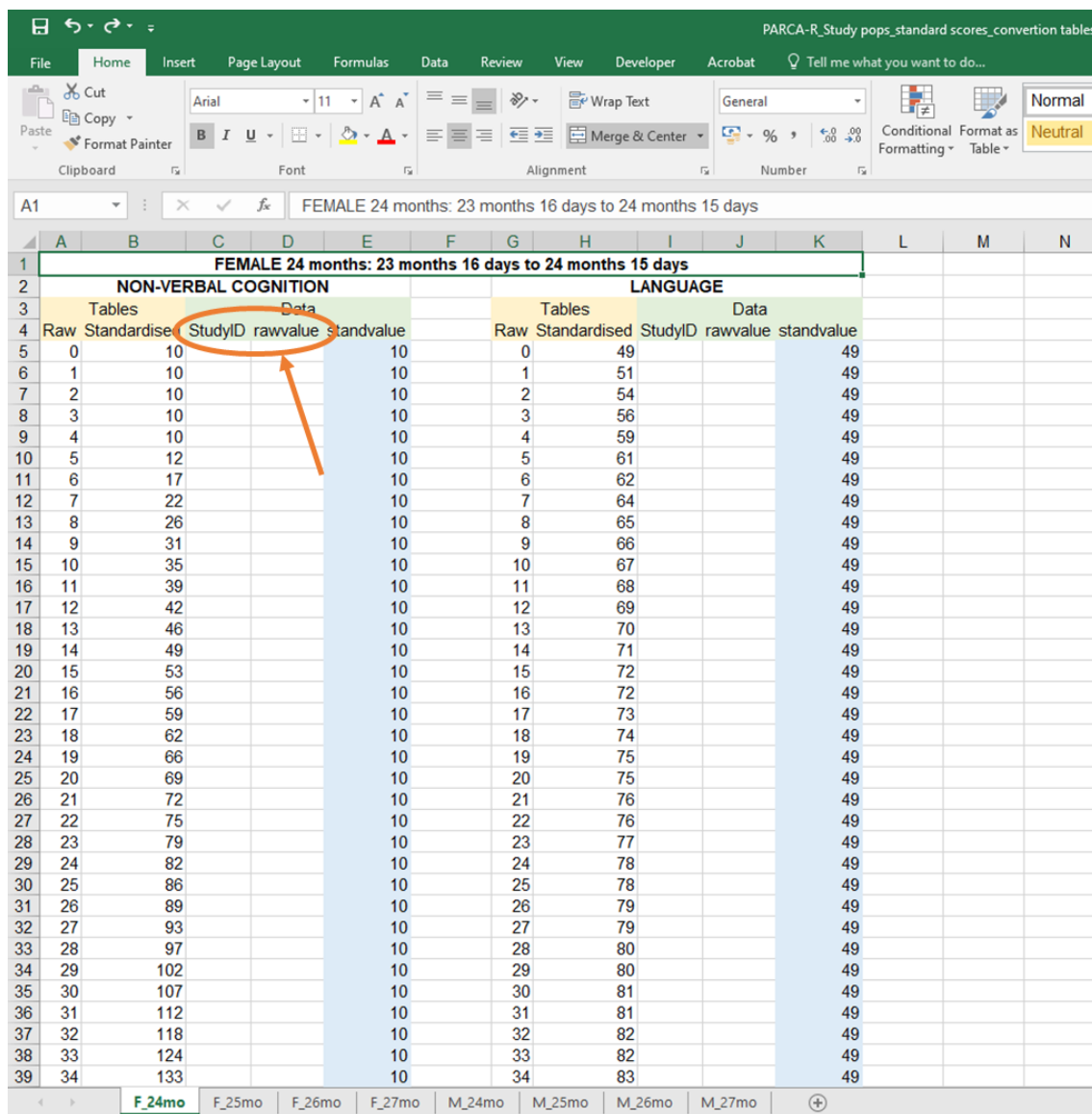
PARCA-R\_Study pops\_standard scores\_conversion tables

| FEMALE 24 months: 23 months 16 days to 24 months 15 days |              |         |          |            |          |              |         |          |            |
|--|--------------|---------|----------|------------|----------|--------------|---------|----------|------------|
| NON-VERBAL COGNITION                                     |              |         |          |            | LANGUAGE |              |         |          |            |
| Tables   |              | Data    |          |            | Tables   |              | Data    |          |            |
| Raw  | Standardised | StudyID | rawvalue | standvalue | Raw      | Standardised | StudyID | rawvalue | standvalue |
| 0  | 10           |         |          | 10         | 0        | 49           |         |          | 49         |
| 1  | 10           |         |          | 10         | 1        | 51           |         |          | 49         |
| 2  | 10           |         |          | 10         | 2        | 54           |         |          | 49         |
| 3  | 10           |         |          | 10         | 3        | 56           |         |          | 49         |
| 4  | 10           |         |          | 10         | 4        | 59           |         |          | 49         |
| 5  | 12           |         |          | 10         | 5        | 61           |         |          | 49         |
| 6  | 17           |         |          | 10         | 6        | 62           |         |          | 49         |
| 7  | 22           |         |          | 10         | 7        | 64           |         |          | 49         |
| 8  | 26           |         |          | 10         | 8        | 65           |         |          | 49         |
| 9  | 31           |         |          | 10         | 9        | 66           |         |          | 49         |
| 10   | 35           |         |          | 10         | 10       | 67           |         |          | 49         |
| 11   | 39           |         |          | 10         | 11       | 68           |         |          | 49         |
| 12   | 42           |         |          | 10         | 12       | 69           |         |          | 49         |
| 13   | 46           |         |          | 10         | 13       | 70           |         |          | 49         |
| 14   | 49           |         |          | 10         | 14       | 71           |         |          | 49         |
| 15   | 53           |         |          | 10         | 15       | 72           |         |          | 49         |
| 16   | 56           |         |          | 10         | 16       | 72           |         |          | 49         |
| 17   | 59           |         |          | 10         | 17       | 73           |         |          | 49         |
| 18   | 62           |         |          | 10         | 18       | 74           |         |          | 49         |
| 19   | 66           |         |          | 10         | 19       | 75           |         |          | 49         |
| 20   | 69           |         |          | 10         | 20       | 75           |         |          | 49         |
| 21   | 72           |         |          | 10         | 21       | 76           |         |          | 49         |
| 22   | 75           |         |          | 10         | 22       | 76           |         |          | 49         |
| 23   | 79           |         |          | 10         | 23       | 77           |         |          | 49         |
| 24   | 82           |         |          | 10         | 24       | 78           |         |          | 49         |
| 25   | 86           |         |          | 10         | 25       | 78           |         |          | 49         |
| 26   | 89           |         |          | 10         | 26       | 79           |         |          | 49         |
| 27   | 93           |         |          | 10         | 27       | 79           |         |          | 49         |
| 28   | 97           |         |          | 10         | 28       | 80           |         |          | 49         |
| 29   | 102          |         |          | 10         | 29       | 80           |         |          | 49         |
| 30   | 107          |         |          | 10         | 30       | 81           |         |          | 49         |
| 31   | 112          |         |          | 10         | 31       | 81           |         |          | 49         |
| 32   | 118          |         |          | 10         | 32       | 82           |         |          | 49         |
| 33   | 124          |         |          | 10         | 33       | 82           |         |          | 49         |
| 34   | 133          |         |          | 10         | 34       | 83           |         |          | 49         |

F.24mo F\_24mo F\_26mo F\_27mo M\_24mo M\_25mo M\_26mo M\_27mo

**Figure 1.** To derive PARCA-R standard scores for females aged 24 months at time of assessment use the sheet headed F\_24mo

Copy the participant IDs and Non-Verbal Cognitive Scale raw scores from your data for this group (females aged 24 months at the time of assessment) and paste them under the corresponding columns (i.e. “StudyID” and “rawvalue”), as shown in Figure 2:



| FEMALE 24 months: 23 months 16 days to 24 months 15 days |              |         |          |            |          |              |         |          |            |
|--|--------------|---------|----------|------------|----------|--------------|---------|----------|------------|
| NON-VERBAL COGNITION                                     |              |         |          |            | LANGUAGE |              |         |          |            |
| Tables   |              |         | Data     |            | Tables   |              |         | Data     |            |
| Raw  | Standardised | StudyID | rawvalue | standvalue | Raw      | Standardised | StudyID | rawvalue | standvalue |
| 0  | 10           |         |          | 10         | 0        | 49           |         |          | 49         |
| 1  | 10           |         |          | 10         | 1        | 51           |         |          | 49         |
| 2  | 10           |         |          | 10         | 2        | 54           |         |          | 49         |
| 3  | 10           |         |          | 10         | 3        | 56           |         |          | 49         |
| 4  | 10           |         |          | 10         | 4        | 59           |         |          | 49         |
| 5  | 12           |         |          | 10         | 5        | 61           |         |          | 49         |
| 6  | 17           |         |          | 10         | 6        | 62           |         |          | 49         |
| 7  | 22           |         |          | 10         | 7        | 64           |         |          | 49         |
| 8  | 26           |         |          | 10         | 8        | 65           |         |          | 49         |
| 9  | 31           |         |          | 10         | 9        | 66           |         |          | 49         |
| 10   | 35           |         |          | 10         | 10       | 67           |         |          | 49         |
| 11   | 39           |         |          | 10         | 11       | 68           |         |          | 49         |
| 12   | 42           |         |          | 10         | 12       | 69           |         |          | 49         |
| 13   | 46           |         |          | 10         | 13       | 70           |         |          | 49         |
| 14   | 49           |         |          | 10         | 14       | 71           |         |          | 49         |
| 15   | 53           |         |          | 10         | 15       | 72           |         |          | 49         |
| 16   | 56           |         |          | 10         | 16       | 72           |         |          | 49         |
| 17   | 59           |         |          | 10         | 17       | 73           |         |          | 49         |
| 18   | 62           |         |          | 10         | 18       | 74           |         |          | 49         |
| 19   | 66           |         |          | 10         | 19       | 75           |         |          | 49         |
| 20   | 69           |         |          | 10         | 20       | 75           |         |          | 49         |
| 21   | 72           |         |          | 10         | 21       | 76           |         |          | 49         |
| 22   | 75           |         |          | 10         | 22       | 76           |         |          | 49         |
| 23   | 79           |         |          | 10         | 23       | 77           |         |          | 49         |
| 24   | 82           |         |          | 10         | 24       | 78           |         |          | 49         |
| 25   | 86           |         |          | 10         | 25       | 78           |         |          | 49         |
| 26   | 89           |         |          | 10         | 26       | 79           |         |          | 49         |
| 27   | 93           |         |          | 10         | 27       | 79           |         |          | 49         |
| 28   | 97           |         |          | 10         | 28       | 80           |         |          | 49         |
| 29   | 102          |         |          | 10         | 29       | 80           |         |          | 49         |
| 30   | 107          |         |          | 10         | 30       | 81           |         |          | 49         |
| 31   | 112          |         |          | 10         | 31       | 81           |         |          | 49         |
| 32   | 118          |         |          | 10         | 32       | 82           |         |          | 49         |
| 33   | 124          |         |          | 10         | 33       | 82           |         |          | 49         |
| 34   | 133          |         |          | 10         | 34       | 83           |         |          | 49         |

**Figure 2.** Paste your data into the columns labelled “StudyID” and “rawvalue”.

The equivalent standard scores will appear under the “standvalue” column, as shown in Figure 3:

PARCA-R\_Study pops\_standard scores\_conversion tables

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A1 FEMALE 24 months: 23 months 16 days to 24 months 15 days

| FEMALE 24 months: 23 months 16 days to 24 months 15 days |              |         |          |            |          |              |         |          |            |
|--|--------------|---------|----------|------------|----------|--------------|---------|----------|------------|
| NON-VERBAL COGNITION                                     |              |         |          |            | LANGUAGE |              |         |          |            |
| Tables   |              | Data    |          |            | Tables   |              | Data    |          |            |
| Raw  | Standardised | StudyID | rawvalue | standvalue | Raw      | Standardised | StudyID | rawvalue | standvalue |
| 0  | 10           | 19      | 27       | 93         | 0        |              |         |          | 49         |
| 1  | 10           | 129     | 31       | 112        | 1        |              | 51      |          | 49         |
| 2  | 10           | 62      | 9        | 31         | 2        |              | 54      |          | 49         |
| 3  | 10           | 66      | 29       | 102        | 3        |              | 56      |          | 49         |
| 4  | 10           | 157     | 29       | 102        | 4        |              | 59      |          | 49         |
| 5  | 12           | 44      | 6        | 17         | 5        |              | 61      |          | 49         |
| 6  | 17           | 4       | 22       | 75         | 6        |              | 62      |          | 49         |
| 7  | 22           | 42      | 24       | 82         | 7        |              | 64      |          | 49         |
| 8  | 26           | 33      | 0        | 10         | 8        |              | 65      |          | 49         |
| 9  | 31           | 69      | 3        | 10         | 9        |              | 66      |          | 49         |
| 10   | 35           | 36      | 12       | 42         | 10       |              | 67      |          | 49         |
| 11   | 39           | 185     | 4        | 10         | 11       |              | 68      |          | 49         |
| 12   | 42           | 45      | 14       | 49         | 12       |              | 69      |          | 49         |
| 13   | 46           | 127     | 6        | 17         | 13       |              | 70      |          | 49         |
| 14   | 49           | 26      | 31       | 112        | 14       |              | 71      |          | 49         |
| 15   | 53           | 166     | 7        | 22         | 15       |              | 72      |          | 49         |
| 16   | 56           | 208     | 33       | 124        | 16       |              | 72      |          | 49         |
| 17   | 59           | 187     | 14       | 49         | 17       |              | 73      |          | 49         |
| 18   | 62           | 173     | 32       | 118        | 18       |              | 74      |          | 49         |
| 19   | 66           | 53      | 31       | 112        | 19       |              | 75      |          | 49         |
| 20   | 69           | 139     | 19       | 66         | 20       |              | 75      |          | 49         |
| 21   | 72           | 189     | 9        | 31         | 21       |              | 76      |          | 49         |
| 22   | 75           | 137     | 3        | 10         | 22       |              | 76      |          | 49         |
| 23   | 79           | 8       | 33       | 124        | 23       |              | 77      |          | 49         |
| 24   | 82           | 55      | 31       | 112        | 24       |              | 78      |          | 49         |
| 25   | 86           | 38      | 16       | 56         | 25       |              | 78      |          | 49         |
| 26   | 89           | 74      | 14       | 49         | 26       |              | 79      |          | 49         |
| 27   | 93           | 149     | 9        | 31         | 27       |              | 79      |          | 49         |
| 28   | 97           | 106     | 17       | 59         | 28       |              | 80      |          | 49         |
| 29   | 102          | 114     | 21       | 72         | 29       |              | 80      |          | 49         |
| 30   | 107          |         |          | 10         | 30       |              | 81      |          | 49         |
| 31   | 112          |         |          | 10         | 31       |              | 81      |          | 49         |
| 32   | 118          |         |          | 10         | 32       |              | 82      |          | 49         |
| 33   | 124          |         |          | 10         | 33       |              | 82      |          | 49         |
| 34   | 133          |         |          | 10         | 34       |              | 83      |          | 49         |

F\_24mo F\_25mo F\_26mo F\_27mo M\_24mo M\_25mo M\_26mo M\_27mo

**Figure 3.** Standard scores are automatically produced when you enter data in the columns for “StudyID” and “rawvalue”, in this example for the Non-Verbal Cognitive Scale.

Repeat the same procedure to obtain standard scores for the Language Scale for the same subgroup, as shown in Figure 4:

PARCA-R\_Study pops\_standard scores\_conversion tables

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A1 FEMALE 24 months: 23 months 16 days to 24 months 15 days

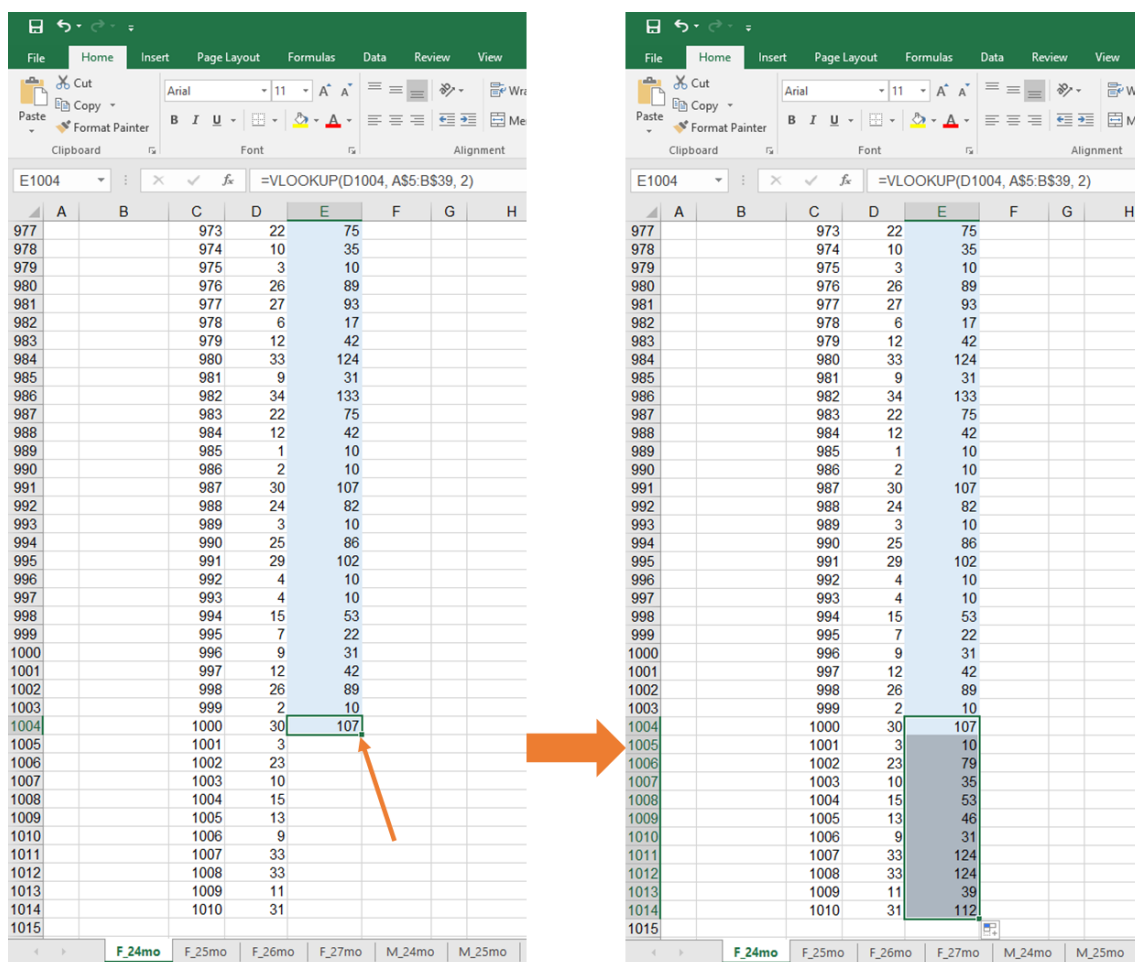
| FEMALE 24 months: 23 months 16 days to 24 months 15 days |              |         |          |            |          |              |         |          |            |  |  |  |  |  |
|--|--------------|---------|----------|------------|----------|--------------|---------|----------|------------|--|--|--|--|--|
| NON-VERBAL COGNITION                                     |              |         |          |            | LANGUAGE |              |         |          |            |  |  |  |  |  |
| Tables   |              | Data    |          |            | Tables   |              | Data    |          |            |  |  |  |  |  |
| Raw  | Standardised | StudyID | rawvalue | standvalue | Raw      | Standardised | StudyID | rawvalue | standvalue |  |  |  |  |  |
| 0  | 10           | 19      | 27       | 93         | 0        | 49           | 19      | 18       | 74         |  |  |  |  |  |
| 1  | 10           | 129     | 31       | 112        | 1        | 51           | 129     | 25       | 78         |  |  |  |  |  |
| 2  | 10           | 62      | 9        | 31         | 2        | 54           | 62      | 68       | 97         |  |  |  |  |  |
| 3  | 10           | 66      | 29       | 102        | 3        | 56           | 66      | 59       | 93         |  |  |  |  |  |
| 4  | 10           | 157     | 29       | 102        | 4        | 59           | 157     | 116      | 123        |  |  |  |  |  |
| 5  | 12           | 44      | 6        | 17         | 5        | 61           | 44      | 35       | 83         |  |  |  |  |  |
| 6  | 17           | 4       | 22       | 75         | 6        | 62           | 4       | 85       | 104        |  |  |  |  |  |
| 7  | 22           | 42      | 24       | 82         | 7        | 64           | 42      | 14       | 71         |  |  |  |  |  |
| 8  | 26           | 33      | 0        | 10         | 8        | 65           | 33      | 32       | 82         |  |  |  |  |  |
| 9  | 31           | 69      | 3        | 10         | 9        | 66           | 69      | 110      | 117        |  |  |  |  |  |
| 10   | 35           | 36      | 12       | 42         | 10       | 67           | 36      | 92       | 107        |  |  |  |  |  |
| 11   | 39           | 185     | 4        | 10         | 11       | 68           | 185     | 124      | 140        |  |  |  |  |  |
| 12   | 42           | 45      | 14       | 49         | 12       | 69           | 45      | 97       | 109        |  |  |  |  |  |
| 13   | 46           | 127     | 6        | 17         | 13       | 70           | 127     | 40       | 86         |  |  |  |  |  |
| 14   | 49           | 26      | 31       | 112        | 14       | 71           | 26      | 66       | 96         |  |  |  |  |  |
| 15   | 53           | 166     | 7        | 22         | 15       | 72           | 166     | 115      | 122        |  |  |  |  |  |
| 16   | 56           | 208     | 33       | 124        | 16       | 72           | 208     | 80       | 102        |  |  |  |  |  |
| 17   | 59           | 187     | 14       | 49         | 17       | 73           | 187     | 26       | 79         |  |  |  |  |  |
| 18   | 62           | 173     | 32       | 118        | 18       | 74           | 173     | 88       | 105        |  |  |  |  |  |
| 19   | 66           | 53      | 31       | 112        | 19       | 75           | 53      | 91       | 107        |  |  |  |  |  |
| 20   | 69           | 139     | 19       | 66         | 20       | 75           | 139     | 78       | 101        |  |  |  |  |  |
| 21   | 72           | 189     | 9        | 31         | 21       | 76           | 189     | 50       | 90         |  |  |  |  |  |
| 22   | 75           | 137     | 3        | 10         | 22       | 76           | 137     | 110      | 117        |  |  |  |  |  |
| 23   | 79           | 8       | 33       | 124        | 23       | 77           | 8       | 85       | 104        |  |  |  |  |  |
| 24   | 82           | 55      | 31       | 112        | 24       | 78           | 55      | 37       | 84         |  |  |  |  |  |
| 25   | 86           | 38      | 16       | 56         | 25       | 78           | 38      | 95       | 108        |  |  |  |  |  |
| 26   | 89           | 74      | 14       | 49         | 26       | 79           | 74      | 49       | 89         |  |  |  |  |  |
| 27   | 93           | 149     | 9        | 31         | 27       | 79           | 149     | 54       | 91         |  |  |  |  |  |
| 28   | 97           | 106     | 17       | 59         | 28       | 80           | 106     | 102      | 112        |  |  |  |  |  |
| 29   | 102          | 114     | 21       | 72         | 29       | 80           | 114     | 5        | 61         |  |  |  |  |  |
| 30   | 107          |         |          | 10         | 30       | 81           |         |          | 49         |  |  |  |  |  |
| 31   | 112          |         |          | 10         | 31       | 81           |         |          | 49         |  |  |  |  |  |
| 32   | 118          |         |          | 10         | 32       | 82           |         |          | 49         |  |  |  |  |  |
| 33   | 124          |         |          | 10         | 33       | 82           |         |          | 49         |  |  |  |  |  |
| 34   | 133          |         |          | 10         | 34       | 83           |         |          | 49         |  |  |  |  |  |

F\_24mo F\_25mo F\_26mo F\_27mo M\_24mo M\_25mo M\_26mo M\_27mo

**Figure 4.** Standard scores are automatically produced when you enter data in the columns for “StudyID” and “rawvalue” for the Non-Verbal Cognitive Scale and the Language Scale.



The excel file is formatted to enable you to derive standard scores for sample sizes up to 1,000. If you have more participants than this, simply drag the last highlighted cell for as many additional cells as needed for your data, as shown in Figure 5:



**Figure 5.** Extending the data file to include more than 1,000 observations.



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