

Technical Test Battery (TTB2)

Reliability: South Africans, Aggregate Population, Updated 2016

Sample Composition

The sample consisted of respondents who had completed any of the subtests of the Technical Test Battery (TTB2) battery in the period up to June 2015, via GeneSys for Windows. Since not all the respondents completed all the subtests, biographical information is reported separately for the three tests.

Mechanical Reasoning Test: Biographical Composition

| Category | Frequency table: Sex | | | |
|----------|----------------------|------------------|----------|--------------------|
| | Count | Cumulative Count | Percent | Cumulative Percent |
| M | 2785 | 2785 | 66,69061 | 66,6906 |
| F | 1378 | 4163 | 32,99808 | 99,6887 |
| U | 13 | 4176 | 0,31130 | 100,0000 |
| Missing | 0 | 4176 | 0,00000 | 100,0000 |

| Category | Frequency table: Education | | | |
|---------------|----------------------------|------------------|----------|--------------------|
| | Count | Cumulative Count | Percent | Cumulative Percent |
| Tertiary | 359 | 359 | 8,59674 | 8,5967 |
| < Matric | 1562 | 1921 | 37,40421 | 46,0010 |
| Grade 12 | 854 | 2775 | 20,45019 | 66,4511 |
| Post Graduate | 6 | 2781 | 0,14368 | 66,5948 |
| Missing | 1395 | 4176 | 33,40517 | 100,0000 |

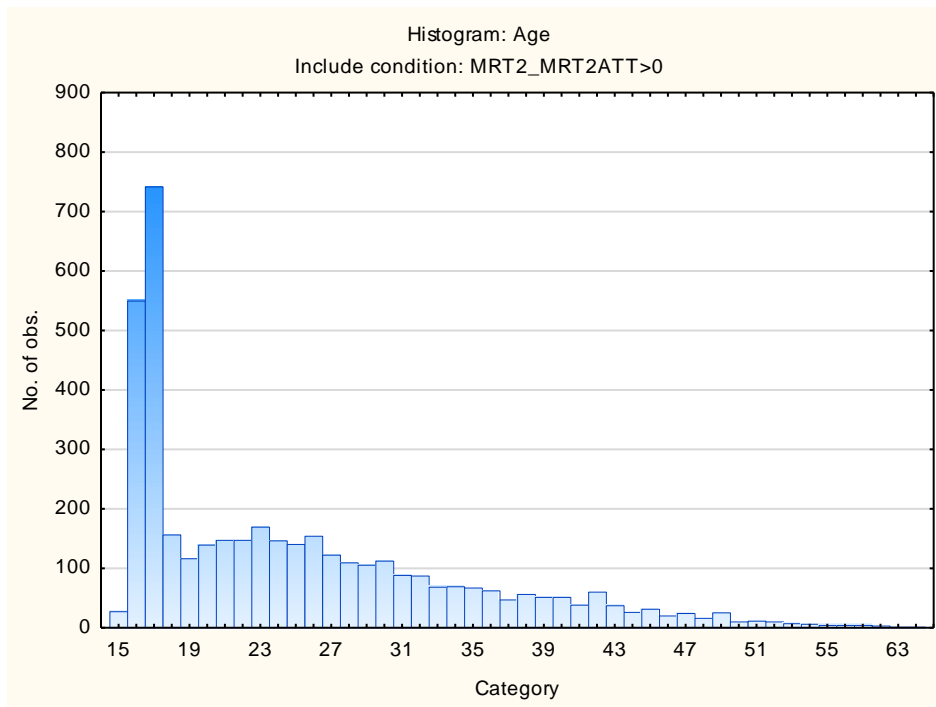
| Category | Frequency table: Language | | | |
|----------|---------------------------|------------------|----------|--------------------|
| | Count | Cumulative Count | Percent | Cumulative Percent |
| isiZulu | 688 | 688 | 16,47510 | 16,4751 |
| English | 380 | 1068 | 9,09962 | 25,5747 |
| isiXhosa | 288 | 1356 | 6,89655 | 32,4713 |

| Category | Frequency table: Language | | | |
|------------|---------------------------|------------------|----------|--------------------|
| | Count | Cumulative Count | Percent | Cumulative Percent |
| Afrikaans | 270 | 1626 | 6,46552 | 38,9368 |
| Sepedi | 434 | 2060 | 10,39272 | 49,3295 |
| siSwati | 99 | 2159 | 2,37069 | 51,7002 |
| isiNdebele | 25 | 2184 | 0,59866 | 52,2989 |
| Setswana | 158 | 2342 | 3,78352 | 56,0824 |
| Xitsonga | 81 | 2423 | 1,93966 | 58,0220 |
| Sesotho | 350 | 2773 | 8,38123 | 66,4033 |
| Tshivenda | 47 | 2820 | 1,12548 | 67,5287 |
| Missing | 1356 | 4176 | 32,47126 | 100,0000 |

| Category | Frequency table: Language Group | | | |
|------------|---------------------------------|------------------|----------|--------------------|
| | Count | Cumulative Count | Percent | Cumulative Percent |
| Indigenous | 2170 | 2170 | 51,96360 | 51,9636 |
| English | 380 | 2550 | 9,09962 | 61,0632 |
| Afrikaans | 270 | 2820 | 6,46552 | 67,5287 |
| Missing | 1356 | 4176 | 32,47126 | 100,0000 |

| Category | Frequency table: Race | | | |
|----------|-----------------------|------------------|----------|--------------------|
| | Count | Cumulative Count | Percent | Cumulative Percent |
| African | 2513 | 2513 | 60,17720 | 60,1772 |
| European | 311 | 2824 | 7,44732 | 67,6245 |
| Coloured | 160 | 2984 | 3,83142 | 71,4559 |
| Asian | 131 | 3115 | 3,13697 | 74,5929 |
| Missing | 1061 | 4176 | 25,40709 | 100,0000 |

| Variable | Descriptive Statistics: Age | | | | | |
|----------|-----------------------------|----------|----------|----------|------|------------------|
| | Mean | Std.Dev | Minimum | Maximum | N | No.cases Missing |
| Age | 25,01354 | 9,203432 | 15,00000 | 69,00000 | 4063 | 113 |



Spatial Reasoning Test: Biographical Composition

| Category | Frequency table: Sex | | | |
|----------|----------------------|------------------|----------|--------------------|
| | Count | Cumulative Count | Percent | Cumulative Percent |
| M | 1898 | 1898 | 87,62696 | 87,6270 |
| F | 264 | 2162 | 12,18837 | 99,8153 |
| U | 4 | 2166 | 0,18467 | 100,0000 |
| Missing | 0 | 2166 | 0,00000 | 100,0000 |

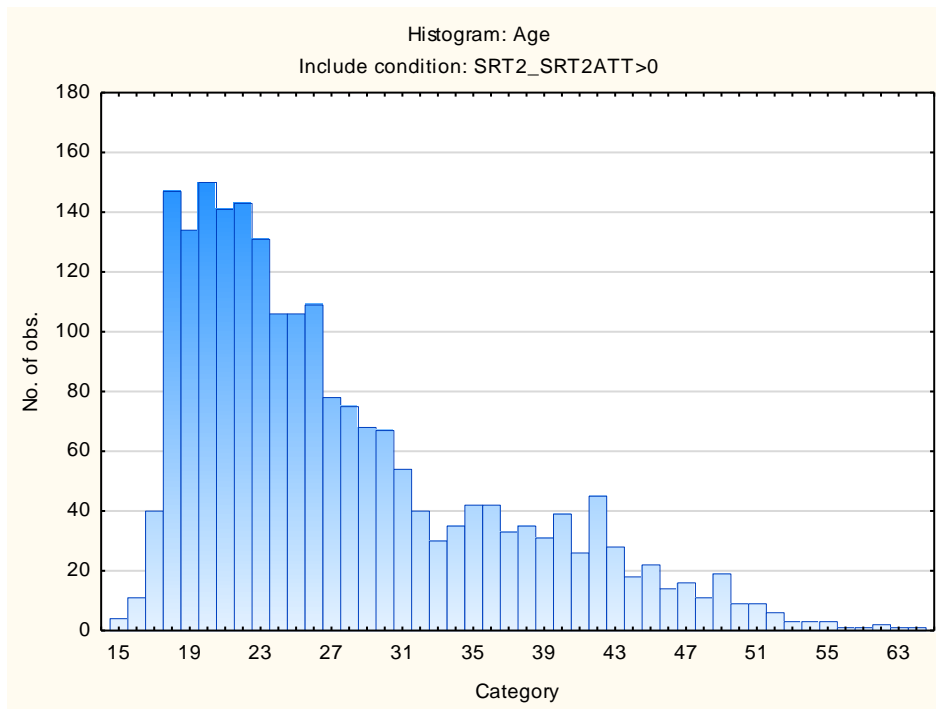
| Category | Frequency table: Education | | | |
|---------------|----------------------------|------------------|----------|--------------------|
| | Count | Cumulative Count | Percent | Cumulative Percent |
| Tertiary | 360 | 360 | 16,62050 | 16,6205 |
| < Matric | 216 | 576 | 9,97230 | 26,5928 |
| Grade 12 | 821 | 1397 | 37,90397 | 64,4968 |
| Post Graduate | 1 | 1398 | 0,04617 | 64,5429 |
| Missing | 768 | 2166 | 35,45706 | 100,0000 |

| Category | Frequency table: Language | | | |
|------------|---------------------------|------------------|----------|--------------------|
| | Count | Cumulative Count | Percent | Cumulative Percent |
| isiZulu | 424 | 424 | 19,57525 | 19,5753 |
| English | 230 | 654 | 10,61865 | 30,1939 |
| isiXhosa | 273 | 927 | 12,60388 | 42,7978 |
| Afrikaans | 244 | 1171 | 11,26500 | 54,0628 |
| Sepedi | 92 | 1263 | 4,24746 | 58,3102 |
| siSwati | 11 | 1274 | 0,50785 | 58,8181 |
| isiNdebele | 11 | 1285 | 0,50785 | 59,3259 |
| Setswana | 43 | 1328 | 1,98523 | 61,3112 |
| Xitsonga | 33 | 1361 | 1,52355 | 62,8347 |
| Sesotho | 252 | 1613 | 11,63435 | 74,4691 |
| Tshivenda | 14 | 1627 | 0,64635 | 75,1154 |
| Missing | 539 | 2166 | 24,88458 | 100,0000 |

| Category | Frequency table: Language Group | | | |
|------------|---------------------------------|------------------|----------|--------------------|
| | Count | Cumulative Count | Percent | Cumulative Percent |
| Indigenous | 1153 | 1153 | 53,23176 | 53,2318 |
| English | 230 | 1383 | 10,61865 | 63,8504 |
| Afrikaans | 244 | 1627 | 11,26500 | 75,1154 |
| Missing | 539 | 2166 | 24,88458 | 100,0000 |

| Category | Frequency table: Race | | | |
|----------|-----------------------|------------------|----------|--------------------|
| | Count | Cumulative Count | Percent | Cumulative Percent |
| African | 1244 | 1244 | 57,43306 | 57,4331 |
| European | 238 | 1482 | 10,98800 | 68,4211 |
| Coloured | 149 | 1631 | 6,87904 | 75,3001 |
| Asian | 67 | 1698 | 3,09326 | 78,3934 |
| Missing | 468 | 2166 | 21,60665 | 100,0000 |

| Variable | Descriptive Statistics: Age | | | | | |
|----------|-----------------------------|----------|----------|----------|------|------------------|
| | Mean | Std.Dev | Minimum | Maximum | N | No.cases Missing |
| Age | 27,59418 | 8,749419 | 15,00000 | 69,00000 | 2129 | 37 |



Visual Acuity Test: Biographical Composition

| Category | Frequency table: Sex | | | |
|----------|----------------------|------------------|----------|--------------------|
| | Count | Cumulative Count | Percent | Cumulative Percent |
| M | 200 | 200 | 84,03361 | 84,0336 |
| F | 38 | 238 | 15,96639 | 100,0000 |
| Missing | 0 | 238 | 0,00000 | 100,0000 |

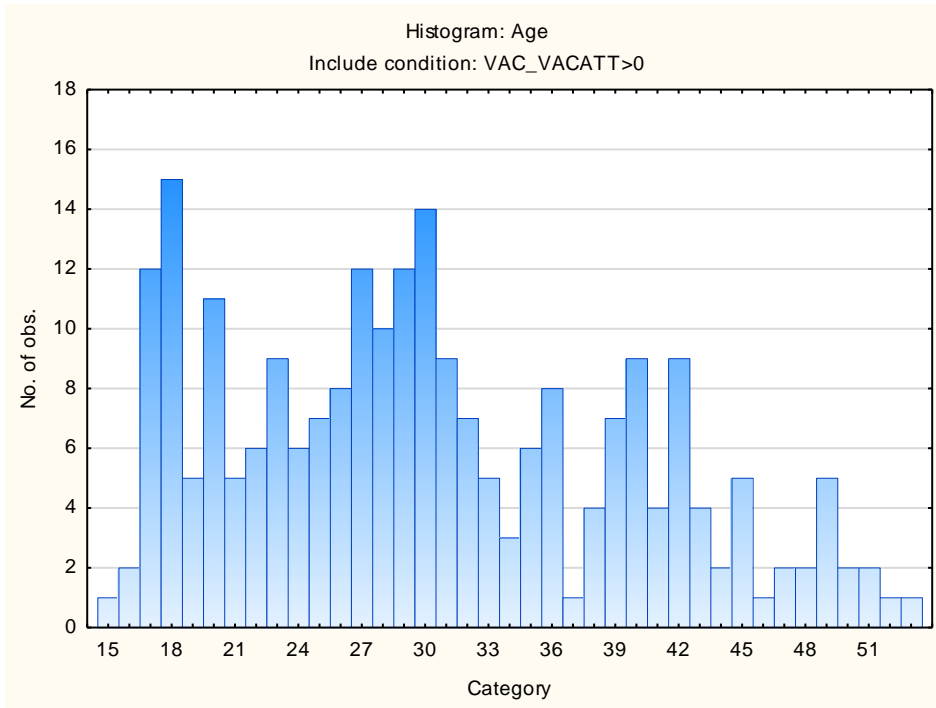
| Category | Frequency table: Education | | | |
|---------------|----------------------------|------------------|----------|--------------------|
| | Count | Cumulative Count | Percent | Cumulative Percent |
| Tertiary | 59 | 59 | 24,78992 | 24,7899 |
| < Matric | 6 | 65 | 2,52101 | 27,3109 |
| Grade 12 | 42 | 107 | 17,64706 | 44,9580 |
| Post Graduate | 1 | 108 | 0,42017 | 45,3782 |
| Missing | 130 | 238 | 54,62185 | 100,0000 |

| Category | Frequency table: Language | | | |
|-----------|---------------------------|------------------|----------|--------------------|
| | Count | Cumulative Count | Percent | Cumulative Percent |
| isiZulu | 26 | 26 | 10,92437 | 10,9244 |
| English | 22 | 48 | 9,24370 | 20,1681 |
| isiXhosa | 7 | 55 | 2,94118 | 23,1092 |
| Afrikaans | 37 | 92 | 15,54622 | 38,6555 |
| Setswana | 1 | 93 | 0,42017 | 39,0756 |
| Xitsonga | 1 | 94 | 0,42017 | 39,4958 |
| Sesotho | 13 | 107 | 5,46218 | 44,9580 |
| Missing | 131 | 238 | 55,04202 | 100,0000 |

| Category | Frequency table: Language Group | | | |
|------------|---------------------------------|------------------|----------|--------------------|
| | Count | Cumulative Count | Percent | Cumulative Percent |
| Indigenous | 48 | 48 | 20,16807 | 20,1681 |
| English | 22 | 70 | 9,24370 | 29,4118 |
| Afrikaans | 37 | 107 | 15,54622 | 44,9580 |
| Missing | 131 | 238 | 55,04202 | 100,0000 |

| Category | Frequency table: Race | | | |
|----------|-----------------------|------------------|----------|--------------------|
| | Count | Cumulative Count | Percent | Cumulative Percent |
| African | 51 | 51 | 21,42857 | 21,4286 |
| European | 51 | 102 | 21,42857 | 42,8571 |
| Coloured | 6 | 108 | 2,52101 | 45,3782 |
| Asian | 1 | 109 | 0,42017 | 45,7983 |
| Missing | 129 | 238 | 54,20168 | 100,0000 |

| Variable | Descriptive Statistics: Age | | | | | |
|----------|-----------------------------|----------|----------|----------|-----|------------------|
| | Mean | Std.Dev | Minimum | Maximum | N | No.cases Missing |
| Age | 30,30342 | 9,504789 | 15,00000 | 59,00000 | 234 | 4 |



Cronbach Coefficient Alpha for Technical Test Battery Subtests:

| Subtest | Cronbach Coefficient Alpha |
|---------------------------|----------------------------|
| Mechanical Reasoning Test | 0,76 |
| Spatial Reasoning Test | 0,77 |
| Visual Acuity Test | 0,83 |

Results of lower than 0.75 are possibly related to respondents guessing the answers to items which they may not know, or a lack of exposure to the type of item content - which could be related to educational background. Results should therefore be interpreted with caution. Do not rely on these tests in isolation, but to consider the results as part of a holistic assessment, which incorporates additional sources of information. It should be remembered with the TTB2, that these tests have a knowledge component, they are not purely ability assessments. Therefore it is recommended that they should be used together with at least an Abstract Reasoning test. They do not substitute for general reasoning ability. School results should also be considered.

Standard Error of Measurement

| Subtest | SEM | SD | Reliability |
|---------------------------|------------|----------|-------------|
| Mechanical Reasoning Test | 2,81439562 | 5,744861 | 0,76 |
| Spatial Reasoning Test | 2,3152927 | 4,827719 | 0,77 |
| Visual Acuity Test | 1,4331107 | 3,475804 | 0,83 |