Data_EDA

August 10, 2021

1 Environment

1.0.1 Libraries and environment variables

```
<IPython.core.display.Javascript object>
```

1.0.2 Set working directory

```
<IPython.core.display.Javascript object>
```

1.0.3 Load Data

```
<IPython.core.display.Javascript object>
```

```
[4]:   Unnamed: 0  Test  Stufe unique_id Level Gesamt_Level   1    2    3    4  \
     0          0     1      1     404_0     C            C  0.0  1.0  1.0  1.0
     1          1     1      1     404_1     A            A  0.0  1.0  0.0  0.0
     2          2     1      1    404_10     B            B  1.0  0.0  0.0  0.0
     3          3     1      1    404_11     A            A  0.0  0.0  0.0  0.0
     4          4     1      1    404_12     B            C  1.0  0.0  1.0  0.0

         5    6    7    8    9   10
     0  1.0  1.0  1.0  1.0  1.0  1.0
     1  0.0  0.0  1.0  0.0  1.0  0.0
     2  1.0  1.0  1.0  0.0  1.0  1.0
     3  0.0  0.0  1.0  1.0  0.0  0.0
     4  0.0  0.0  1.0  0.0  1.0  1.0
```

```
<IPython.core.display.Javascript object>
```

2 EDA

2.0.1 Items per test

```
  Subtest 1 item count: 10
  Subtest 2 item count: 10
  Subtest 3 item count: 50
  Subtest 4 item count: 30
```

```
<IPython.core.display.Javascript object>
```

2.0.2 Children

```
 Subtest 1 Kinder: 51
 Subtest 2 Kinder: 52
 Subtest 3 Kinder: 51
 Subtest 4 Kinder: 46
```

```
<IPython.core.display.Javascript object>
```

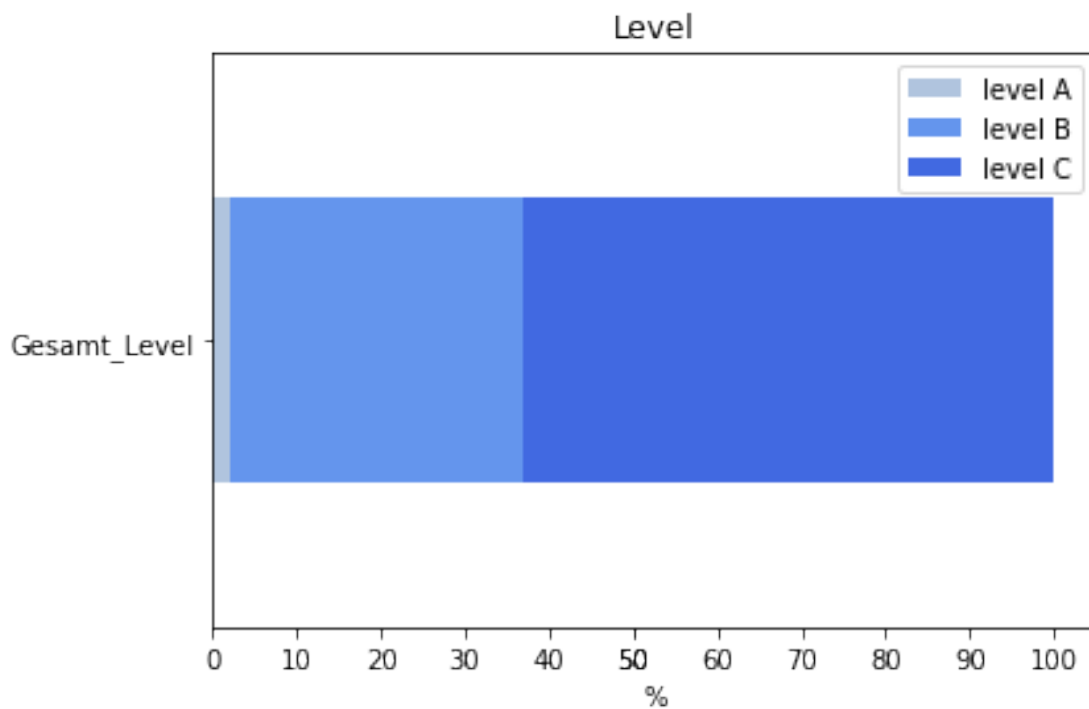### 2.0.3 1. Final level

```
<IPython.core.display.Javascript object>
```
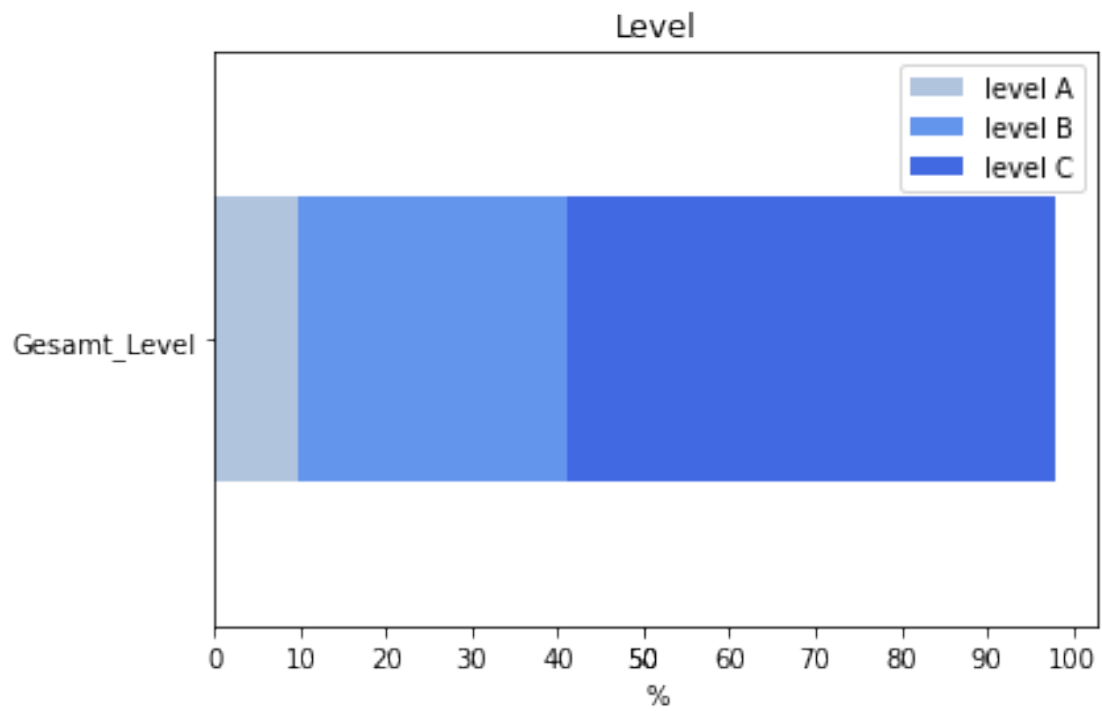
nur Kinder, die auch Test 4 gemacht haben:

```
                       A          B          C
Gesamt_Level    2.173913   34.782609   63.043478
```



```
<IPython.core.display.Javascript object>
```

inklusive Kindern, die Test 4 nicht gemacht haben:

```
                       A          B          C
Gesamt_Level    9.803922   31.372549   56.862745
```
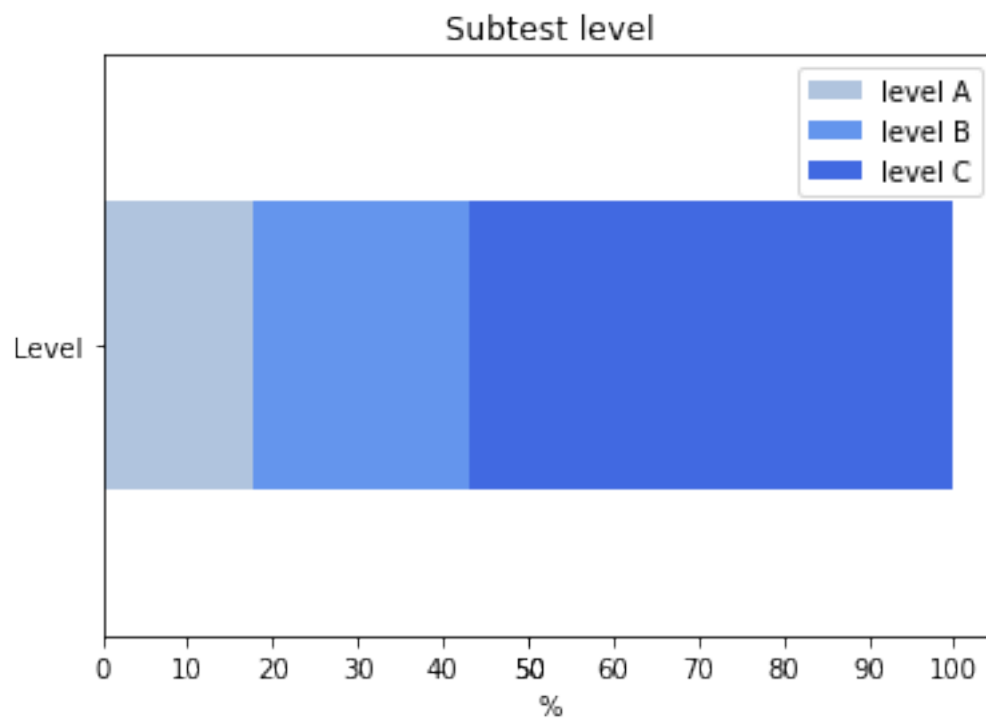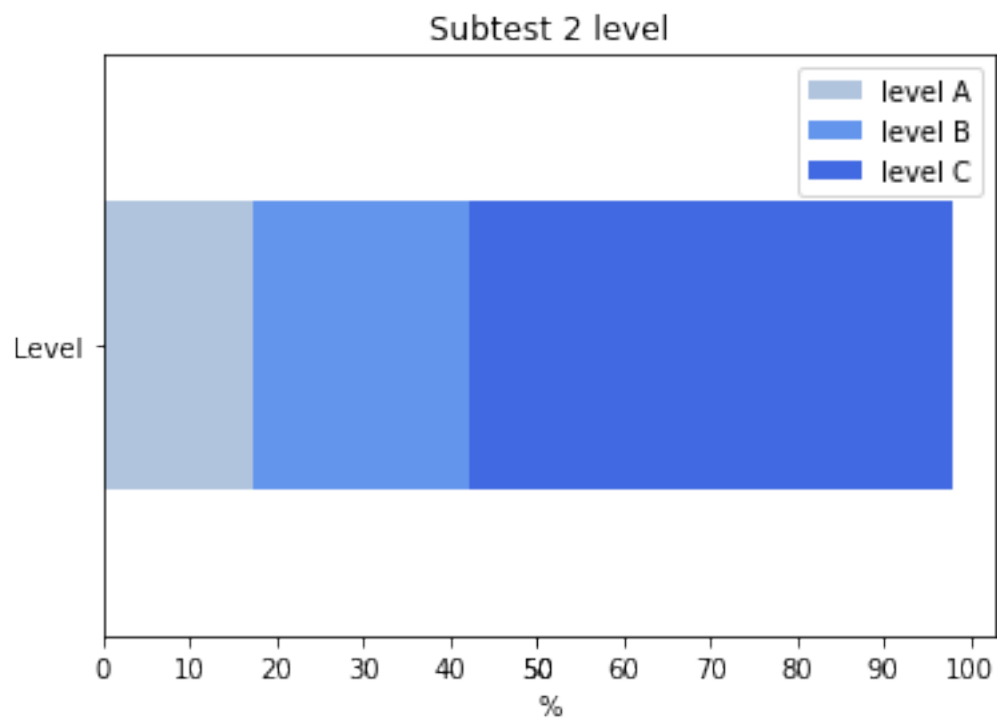
Level

<IPython.core.display.Javascript object>

2.0.4 2. Subtest level

Subtest 1 Level

```
              A          B          C
Level  17.647059  25.490196  56.862745
```
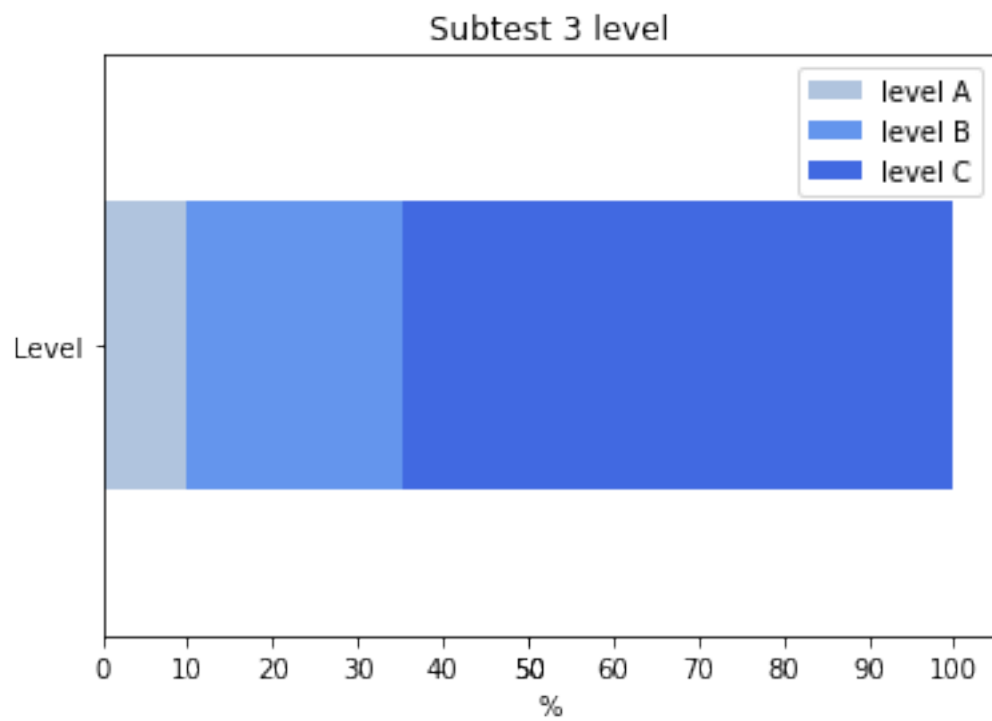
Subtest level

<IPython.core.display.Javascript object>

Subtest 2 Level

```
             A      B          C
Level  17.307692  25.0  55.769231
```
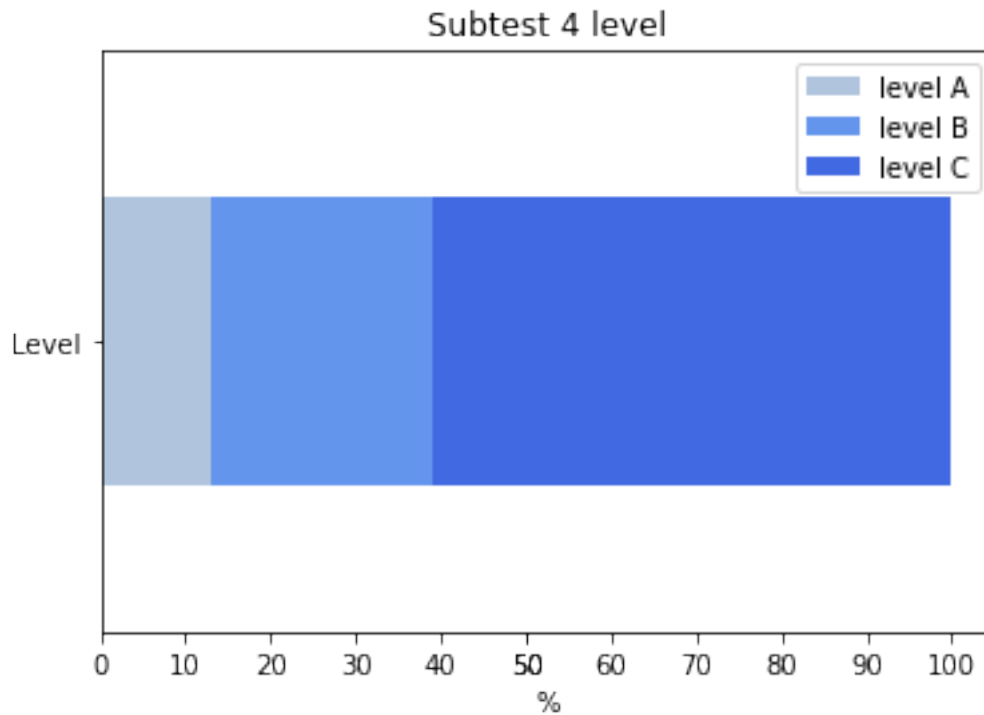
Subtest 2 level

<IPython.core.display.Javascript object>

Subtest 3 Level

```
              A          B          C
Level  9.803922  25.490196  64.705882
```

Subtest 3 level

<IPython.core.display.Javascript object>

Subtest 4 Level

	A	B	C
Level	13.043478	26.086957	60.869565

Subtest 4 level


```
<IPython.core.display.Javascript object>
```

2.0.5   4. Item Difficulty −> Results of Subtest Items Participation/Motivation

```
<IPython.core.display.Javascript object>
```

Subtest 1: Missing values

Kinder: 51

```
[15]:        missing_values  missing_values(%)
      column
      10                   5           9.803922
      4                    4           7.843137
      9                    2           3.921569
      3                    1           1.960784
      5                    1           1.960784
```

```
<IPython.core.display.Javascript object>
```

Subtest 2: Missing values

Kinder: 52

```
[16]:      missing_values  missing_values(%)
    column
    10              12          23.076923
    8                6          11.538462
    2                5           9.615385
    9                5           9.615385
    7                4           7.692308
```

<IPython.core.display.Javascript object>

Subtest 3: Missing values

Kinder: 51

```
[17]:      missing_values  missing_values(%)
    column
    50              32          62.745098
    48              31          60.784314
    49              30          58.823529
    47              29          56.862745
    46              29          56.862745
    43              27          52.941176
    45              27          52.941176
    44              27          52.941176
    42              26          50.980392
    41              25          49.019608
```

<IPython.core.display.Javascript object>

Subtest 4: Missing values

Kinder: 46

```
[18]:      missing_values  missing_values(%)
    column
    29              35          76.086957
    30              34          73.913043
    28              34          73.913043
    27              32          69.565217
    26              30          65.217391
    25              29          63.043478
    21              25          54.347826
    24              25          54.347826
    20              24          52.173913
    23              24          52.173913
```
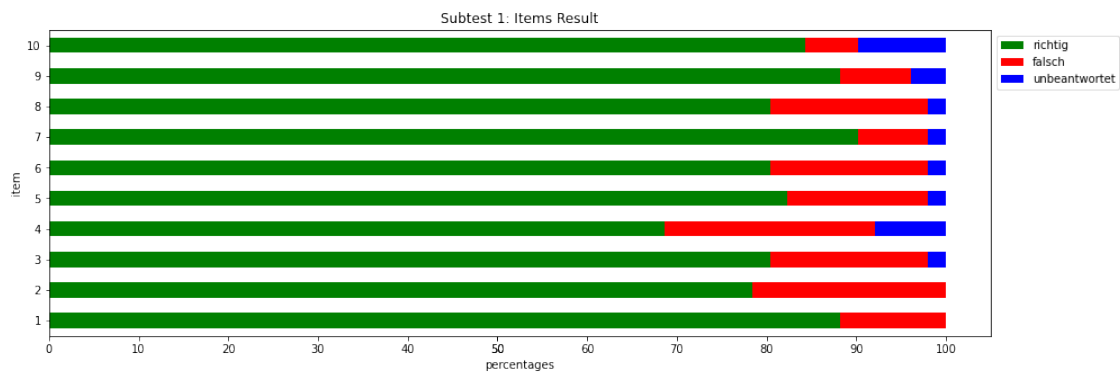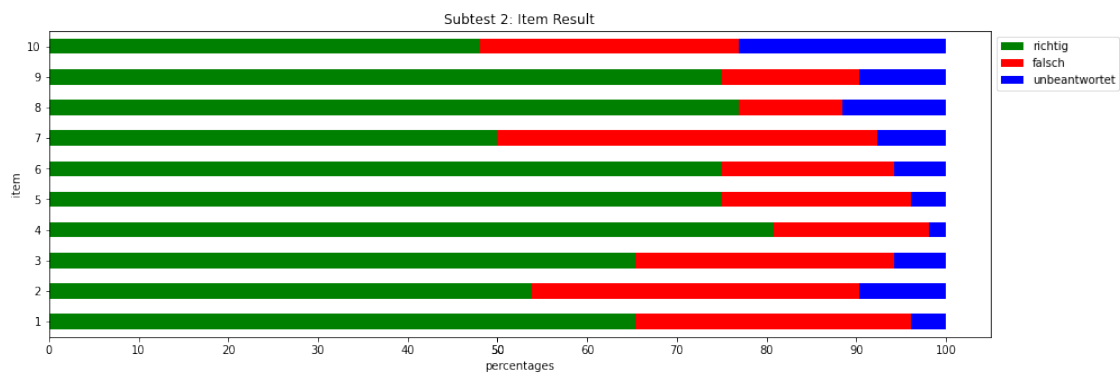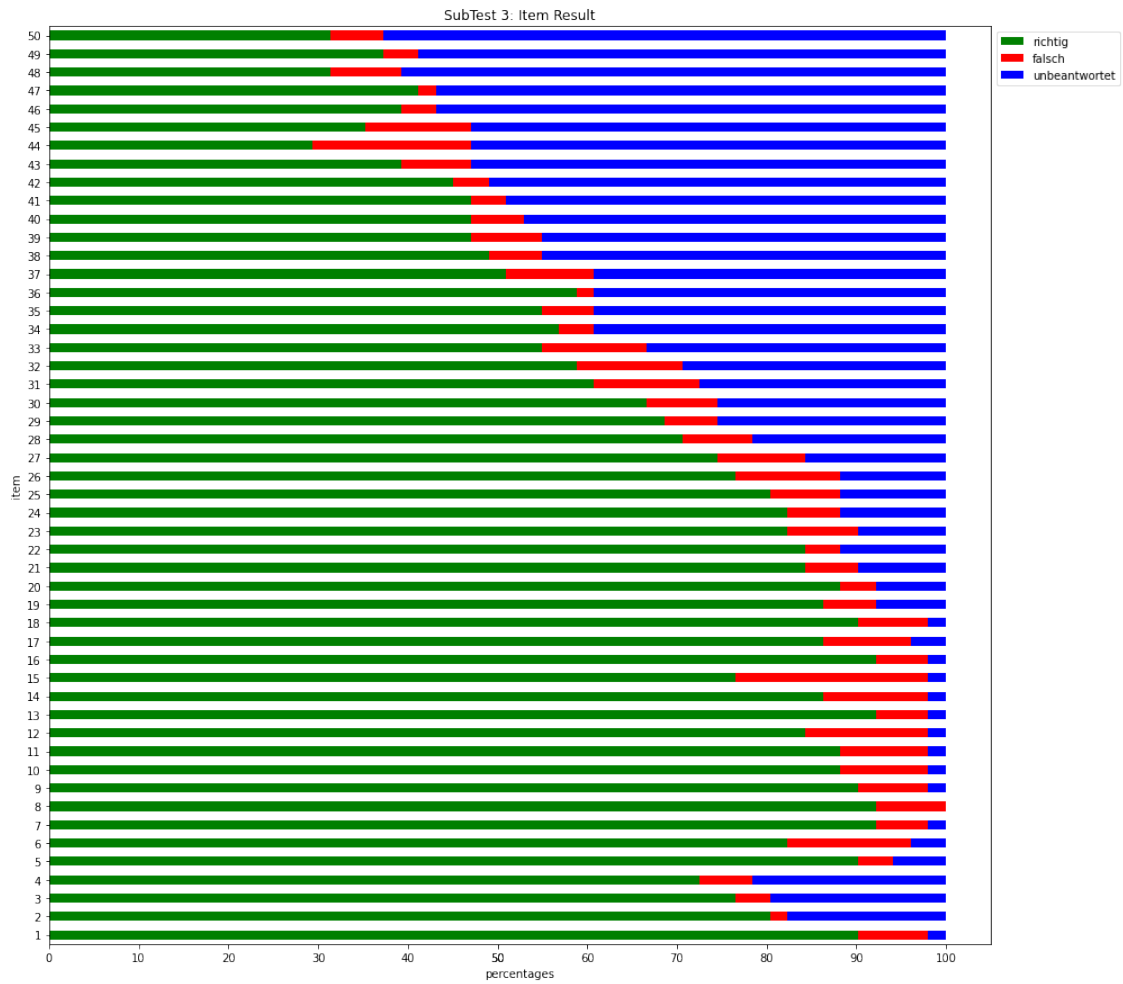
<IPython.core.display.Javascript object>
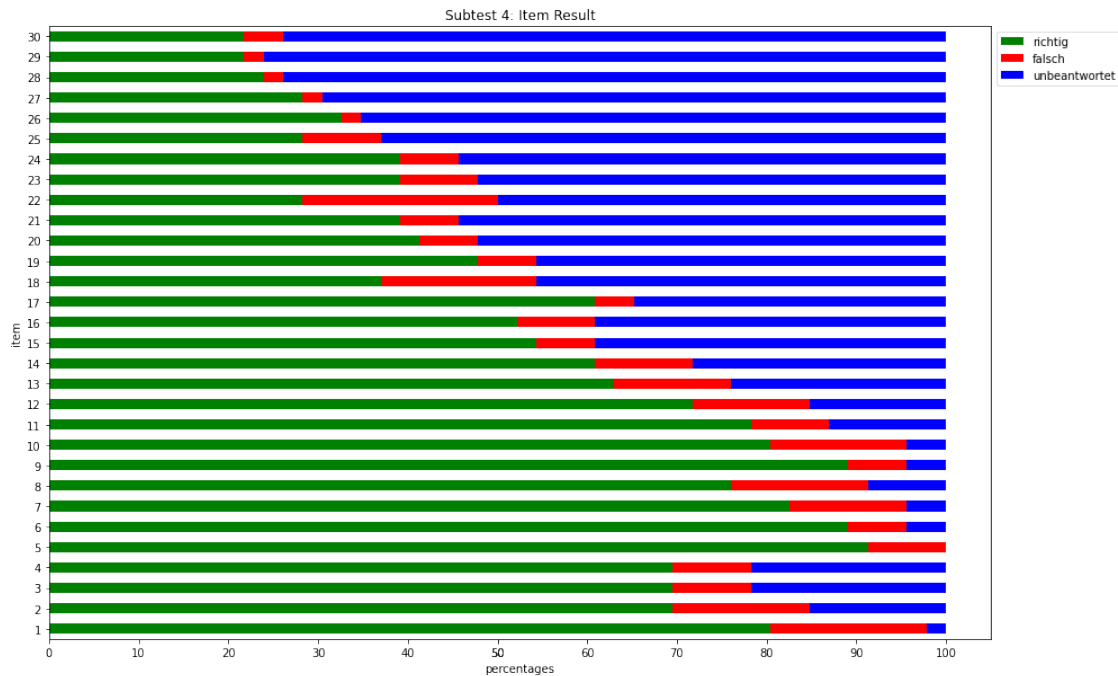
<IPython.core.display.Javascript object>

Subtest 1 : Item results

Subtest 1: Items Result

<IPython.core.display.Javascript object>

Subtest 2: Item results

Subtest 2: Item Result

<IPython.core.display.Javascript object>

Subtest 3: Item results

SubTest 3: Item Result

<IPython.core.display.Javascript object>

Subtest 4 : Item results

Subtest 4: Item Result

```
<IPython.core.display.Javascript object>
```

2.0.6 5. Correlations

Are there significant correlations (> 0.85) between false answers and no response?

```
<IPython.core.display.Javascript object>
```

Subtest 1

```
Subtest 1, Correlation false & unanswered:  -0.16724840200141827
<IPython.core.display.Javascript object>
```

Subtest 2

```
Subtest 2, Correlation false & unanswered:  0.09483094592136888
<IPython.core.display.Javascript object>
```

Subtest 3

```
Subtest 3, Correlation false & unanswered:  -0.22201116427028048
<IPython.core.display.Javascript object>
```

Subtest 4

```
Subtest 4, Correlation false & unanswered:  -0.5491691547746677
```

`<IPython.core.display.Javascript object>`

2.1 Class level

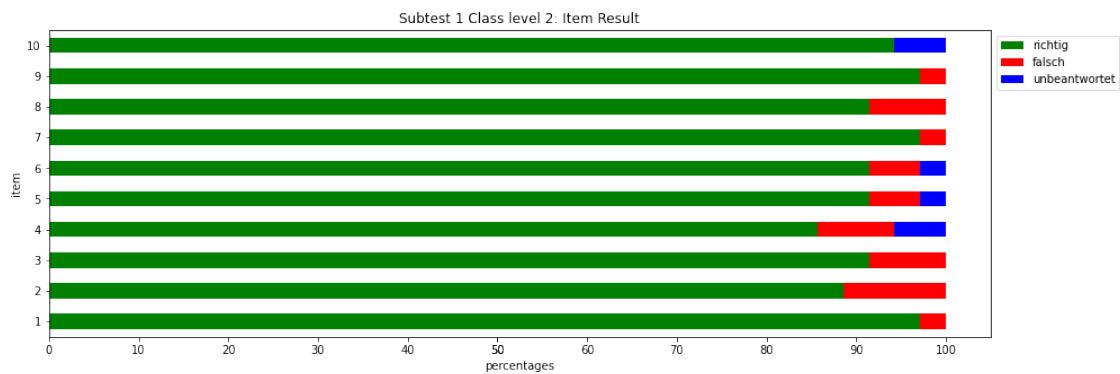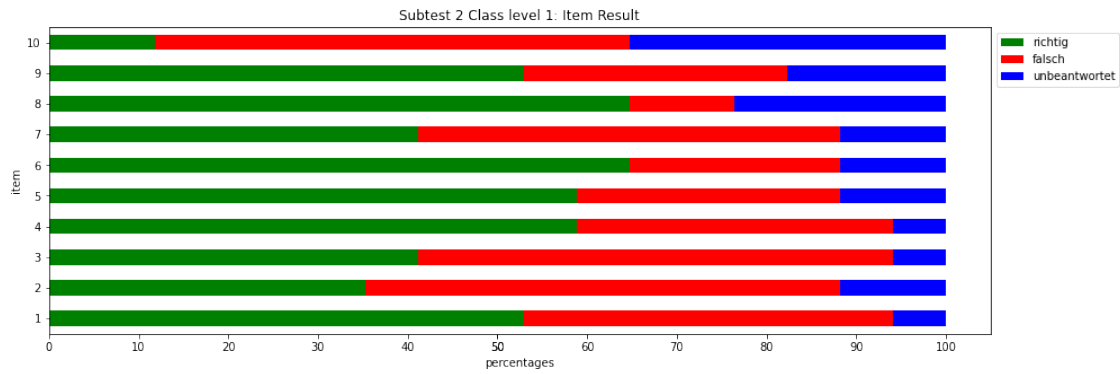### 2.1.1 Subtest 1

`<IPython.core.display.Javascript object>`

Class level 1

Subtest 1 Class level 1: Item Result

`<IPython.core.display.Javascript object>`

Class level 2

Subtest 1 Class level 2: Item Result

`<IPython.core.display.Javascript object>`

2.1.2 Subtest 2

`<IPython.core.display.Javascript object>`

Class level 1

Subtest 2 Class level 1: Item Result

<IPython.core.display.Javascript object>

Class level 2

Subtest 2 Class level 2: Item Result

<IPython.core.display.Javascript object>

2.1.3 Subtest 3

<IPython.core.display.Javascript object>

Class level 1

Subtest 3 Class level 1: Item Difficulty

`<IPython.core.display.Javascript object>`

Class level 2

Subtest 3 Class level 2: Item Difficulty

```
<IPython.core.display.Javascript object>
```

2.1.4 Subtest 4

```
<IPython.core.display.Javascript object>
```

Class level 1

Subtest 4 Class level 1: Item Difficulty

```
<IPython.core.display.Javascript object>
```

Class level 2

Subtest 4 Class level 2: Item Difficulty

```
<IPython.core.display.Javascript object>
```
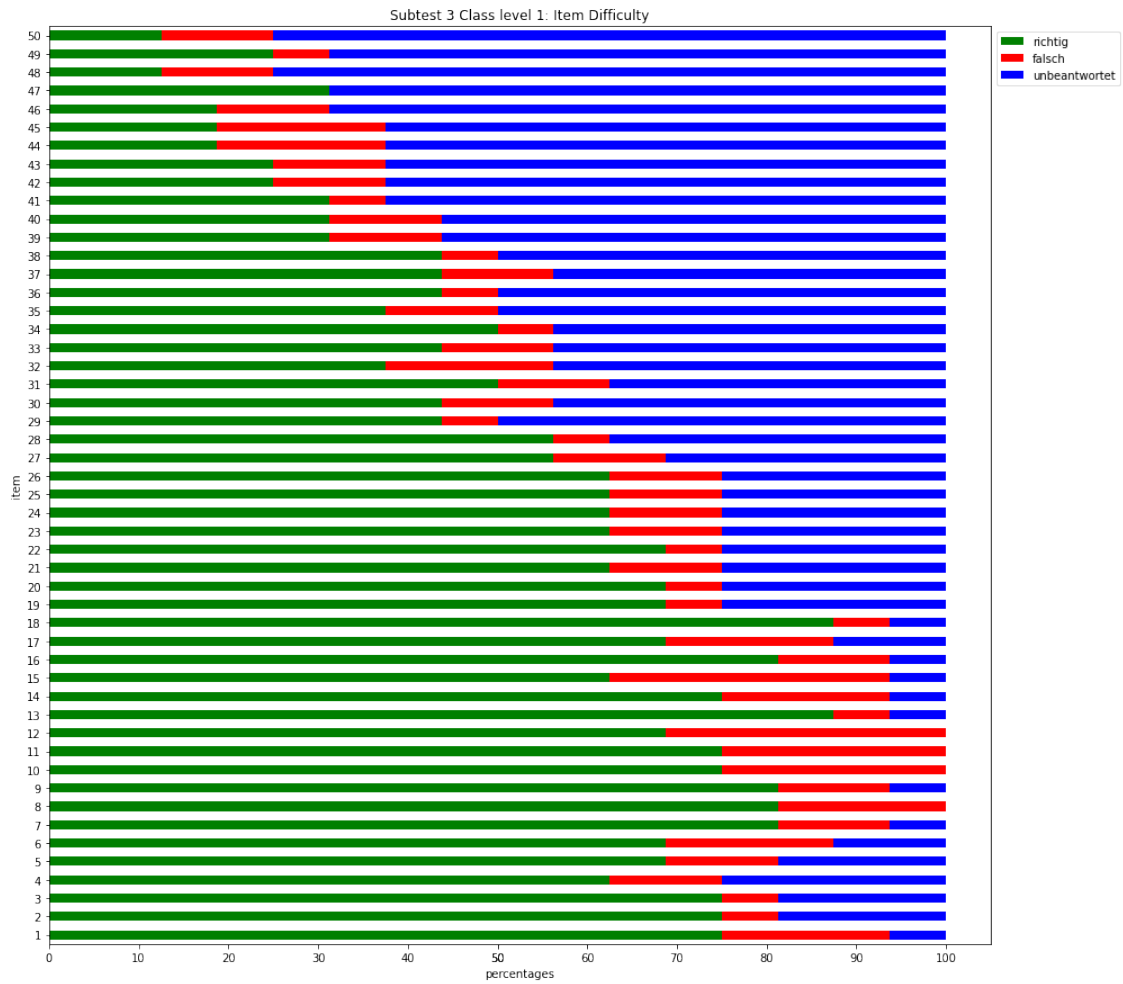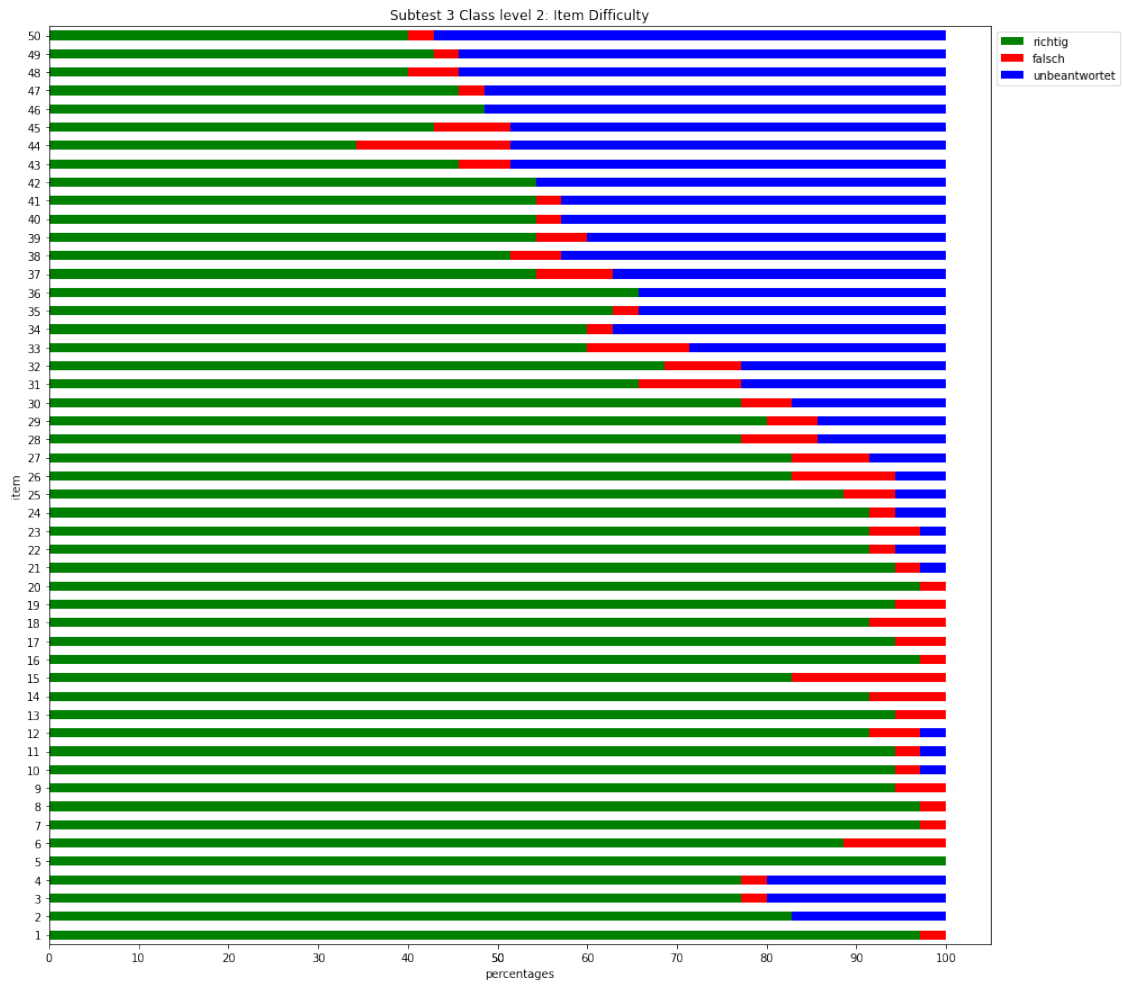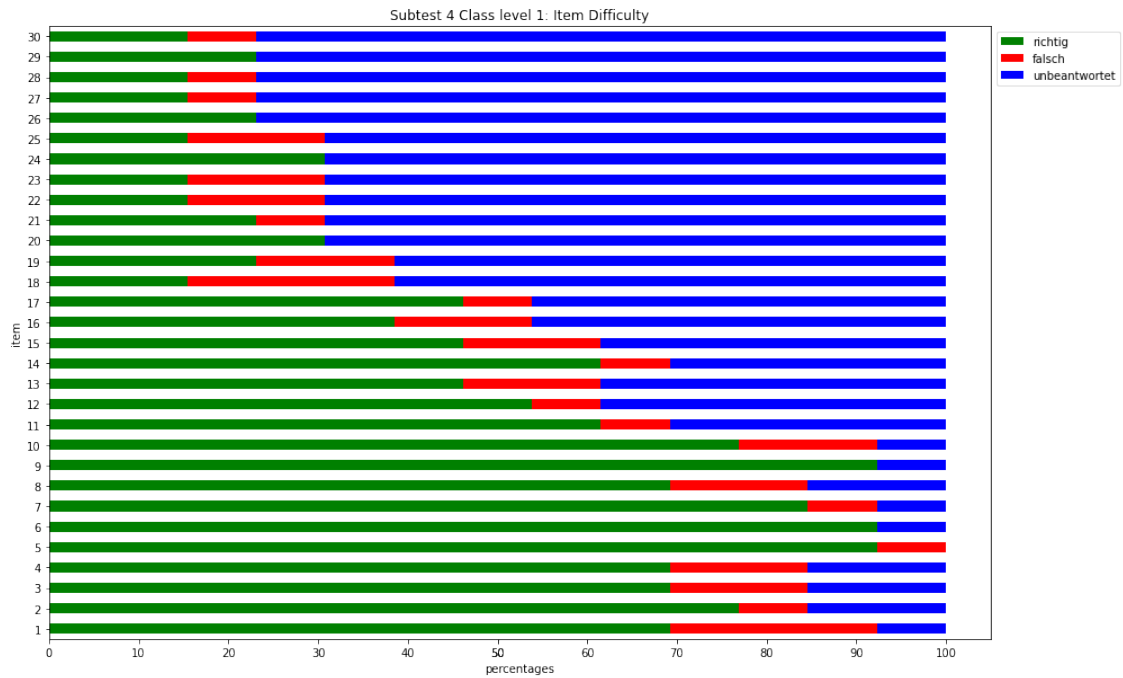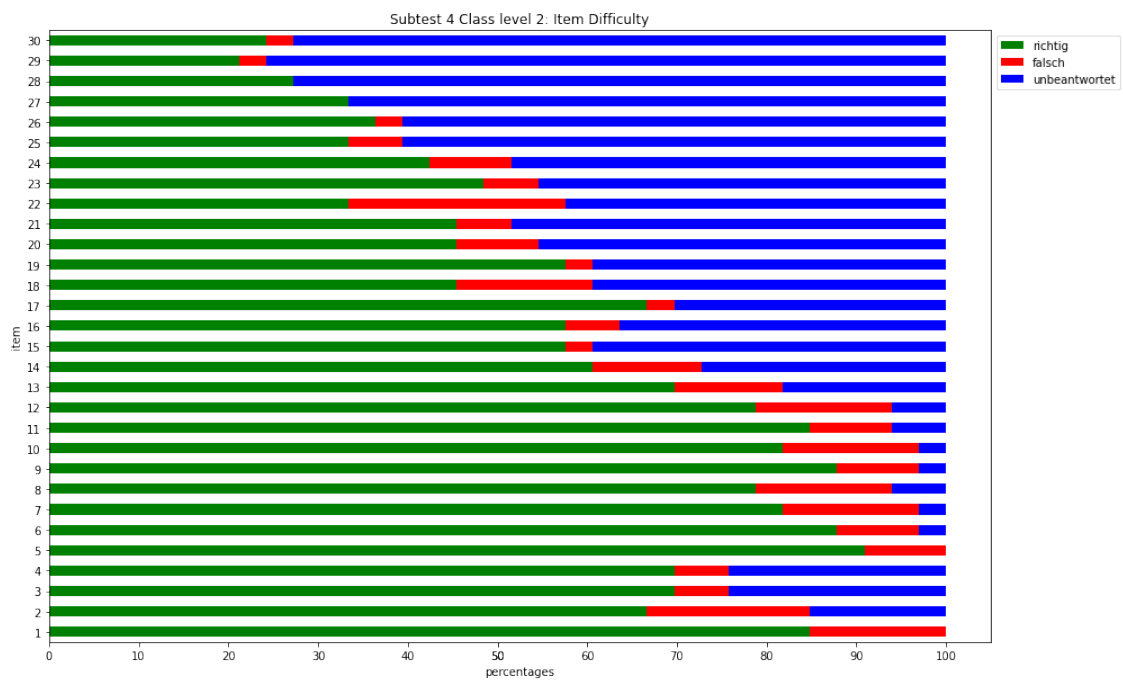
2.2 Item discrimination

compare the score on each question against the socre on the test a s a whole.
If less than 0.1 or even negative the item needs to be reexamined.