Concurrent validation study
DISC vs. Big Five

What are the similarities and differences?

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1   Introduction

The *DISC Personality Model* and the *Big Five Personality Model* are both personality theories with many followers. On the one hand, the scientific community has a consensus on the reliability and validity of the Big Five. On the other hand, the business community is convinced of the usefulness of the DISC.

1.1   Why this comparison?

By examining the differences and similarities between the two models, we want to give the user enough information to make their own choice when using these tests. Previous small-scale research by (Jones 2013) provides a good comparison of the tests, but further extensive research is needed to draw conclusions from this.

2   Method

As of January 1, 2018, more than 1,000,000 completions of the English-language Big Five Personality Test and more than 2,000,000 completions of the English-language DISC Personality Test have been made at *www.123test.com*. Of these two groups, 9000+ respondents took both tests. By analyzing the data from these anonymous respondents, we can form a good picture of both instruments and compare them.

2.1   Instruments Used

- The DISC Personality test is free to use at https://www.123test.com/disc-personality-test/.
- The Big Five Personality test is free to use at https://www.123test.com/personality-test/.

3 Exploration of the research data

To explore the research data, this section explores some of the respondent's background variables.

3.1 Age
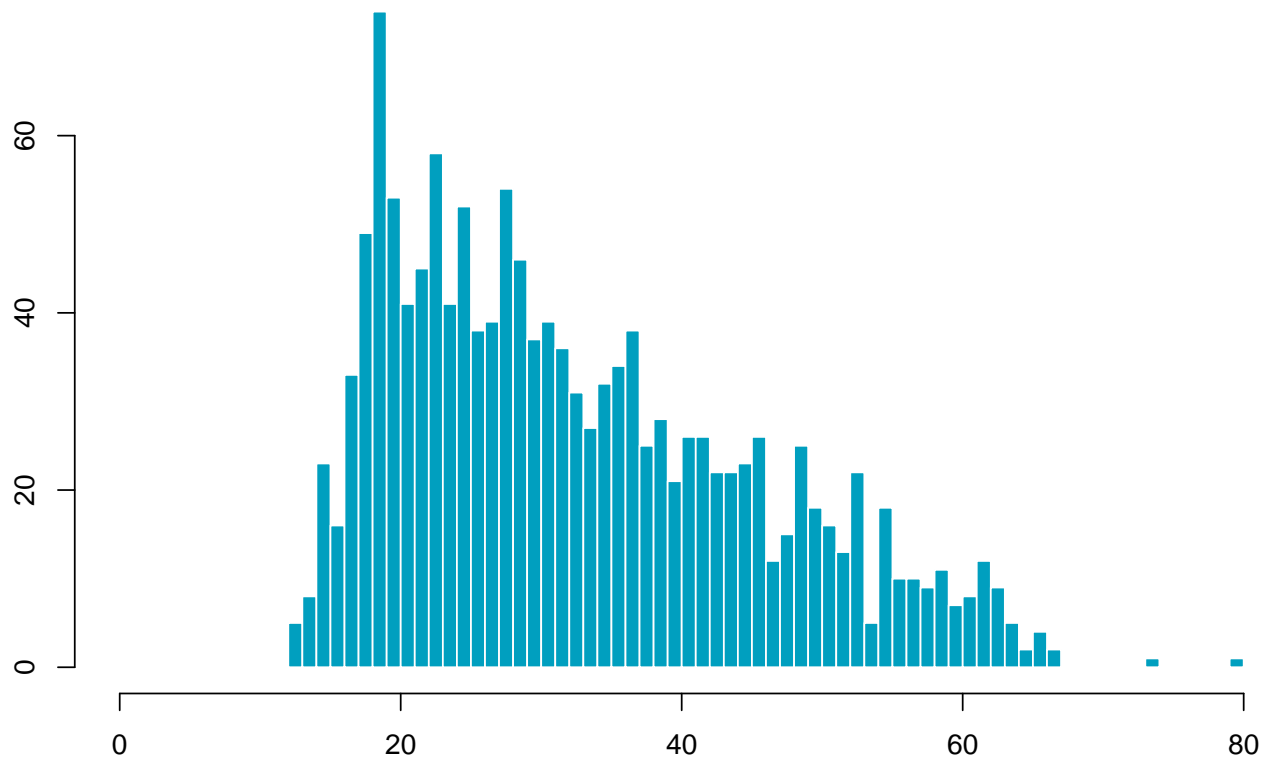
3.2 Gender

	N	%
Female	947	67.12
Male	464	32.88
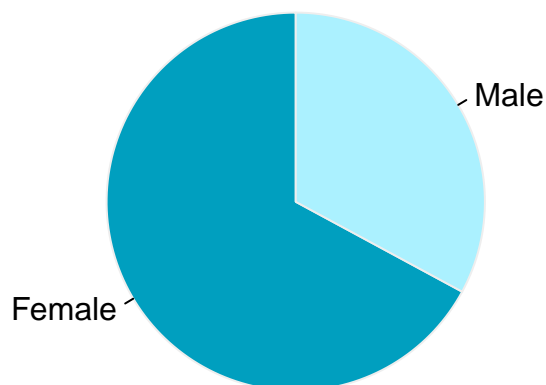
3.3   Gender and age
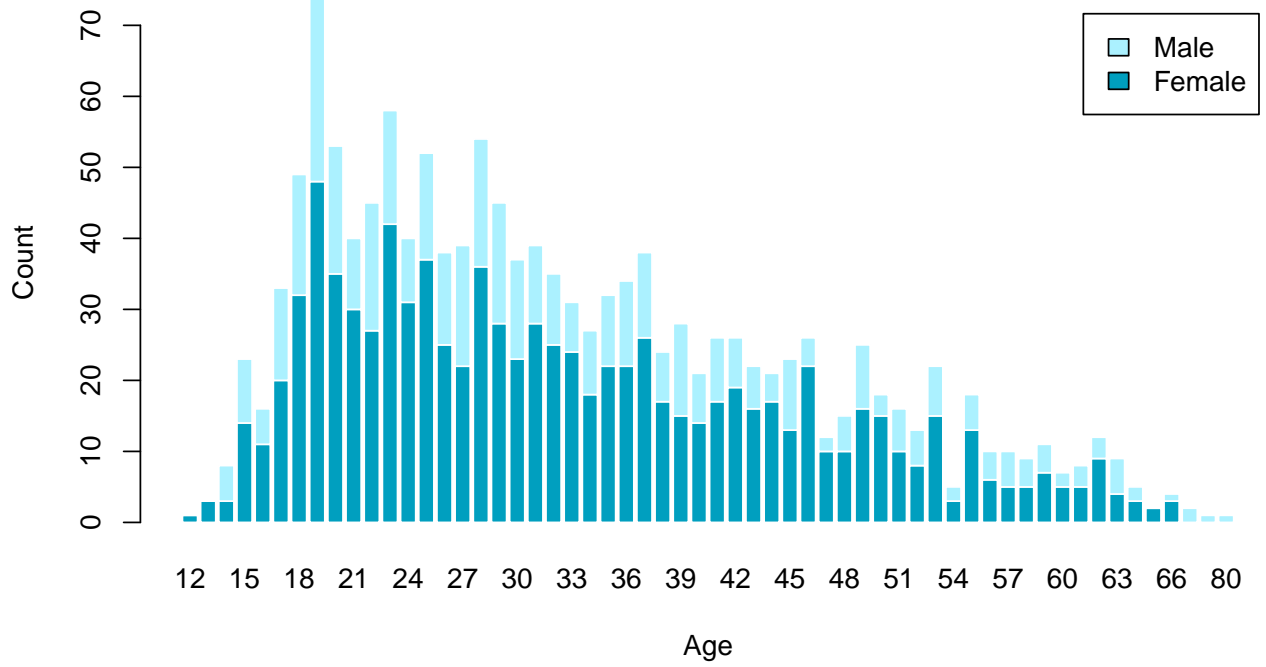
3.4   Education level

		N	%
0	Unknown	51	3.52
1	Primary school	8	0.55
2	High school	261	18.04
3	College	458	31.65
4	University	590	40.77
5	PhD	44	3.04
6	Other	35	2.42
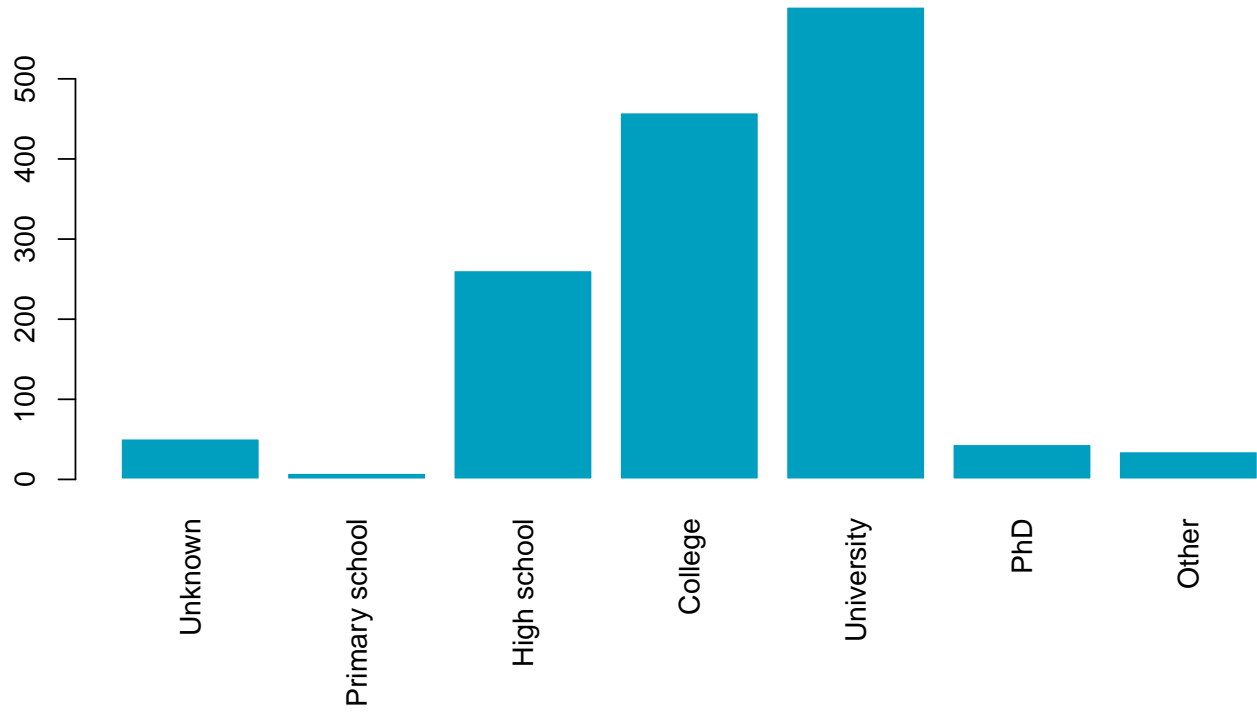
3.5 Education level and gender
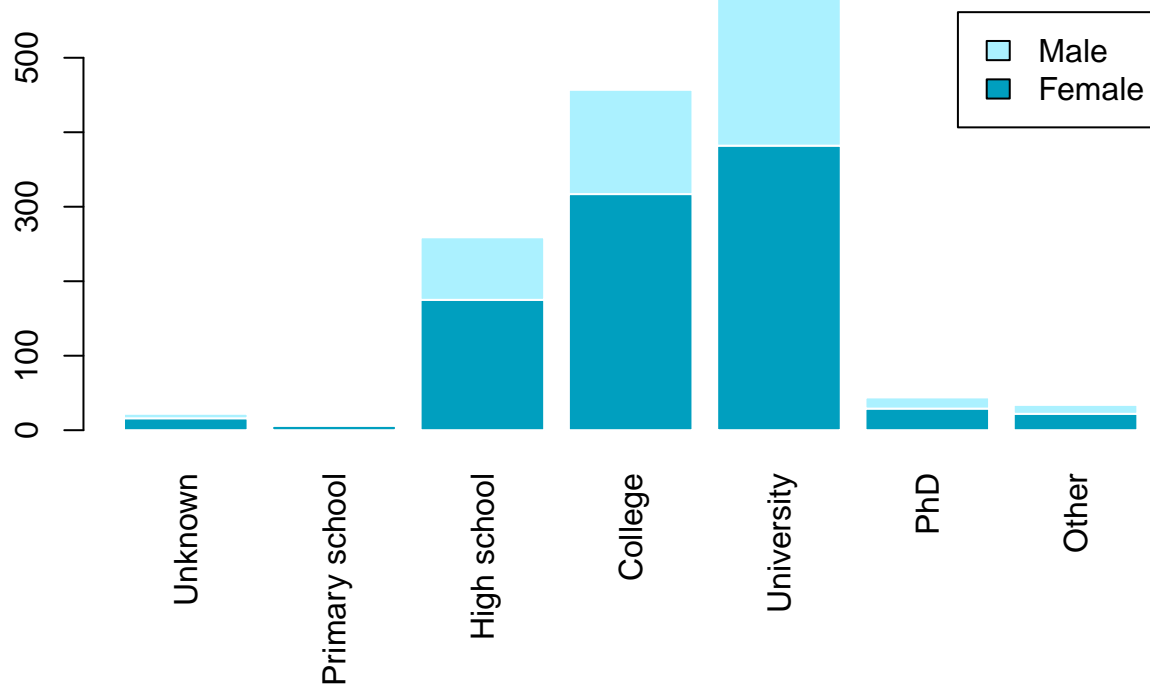
4 DISC

4.1 Histograms of Raw Scores

The histograms below show the raw scores for each DISC factor. All factors appear to be normally distributed and do not constitute a reason to refrain from further analysis.
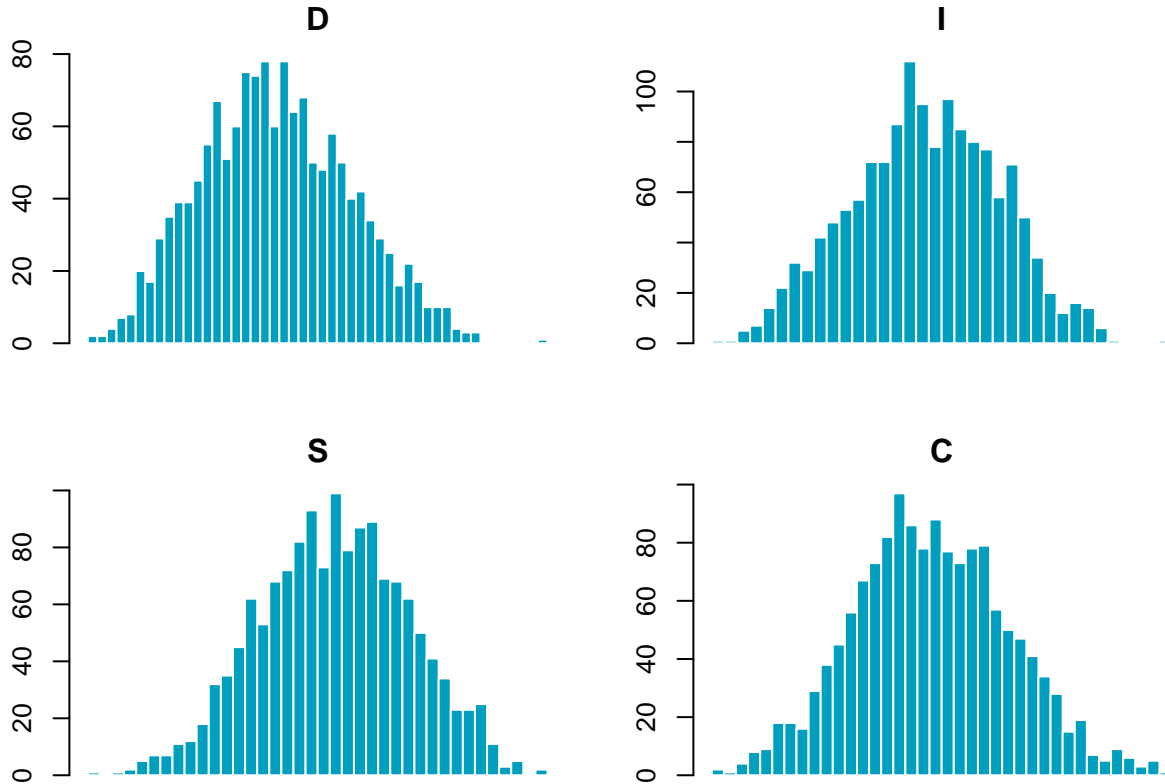
4.2 Correlations among DISC factors

In the correlation table below, the four DISC factors are correlated with each other. As the DISC model predicts, *Dominance* correlates strongly negatively with *Steadiness* and *Compliance* correlates strongly negatively with *Influence*. This contributes to the validation of both the questionnaire and the DISC model as a whole.

	D	I	S	C
D	1.000	0.088	-0.788	-0.525
I	0.088	1.000	-0.320	-0.700
S	-0.788	-0.320	1.000	0.274
C	-0.525	-0.700	0.274	1.000

5   Big Five

5.1   Histograms of raw scores

The histograms below show the raw scores for each Big Five factor. All factors appear to be normally distributed: *Agreeableness* appears to show a small ceiling effect but this does not constitute a reason to refrain from further analysis.
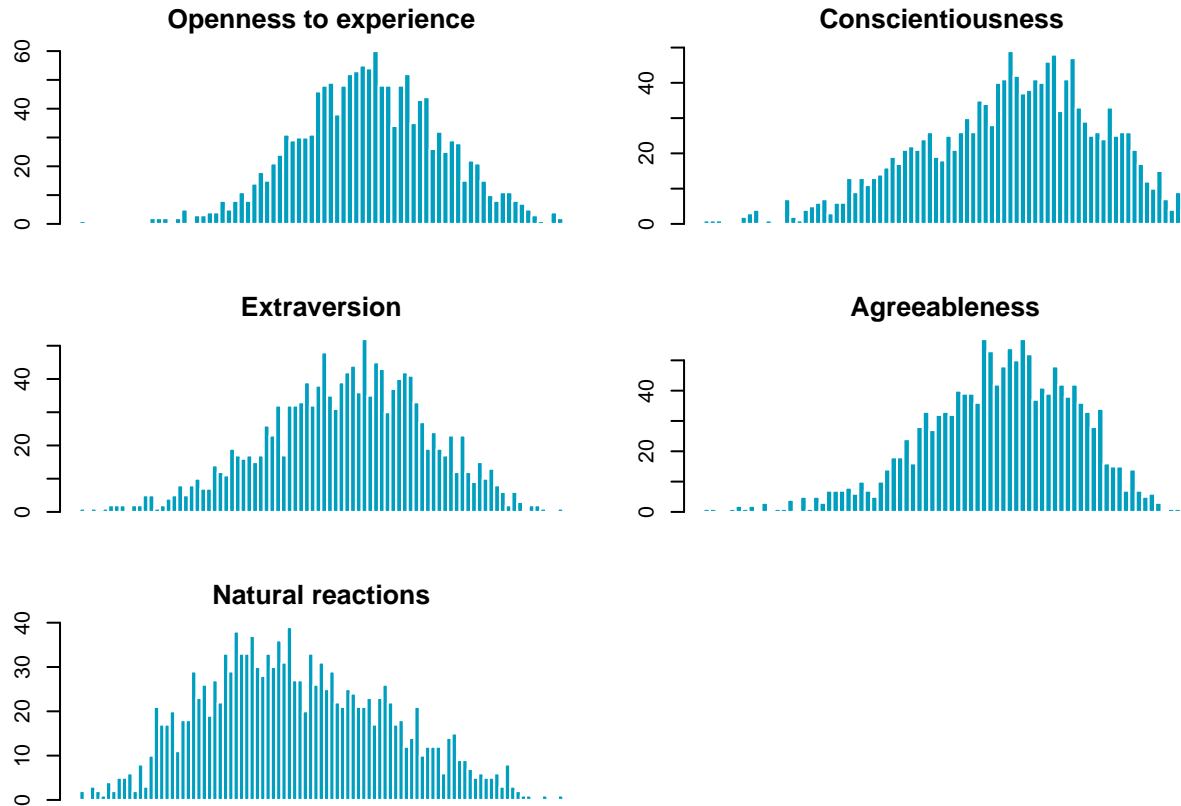
5.2   Correlations among Big Five factors

In the correlation table below, the five Big Five factors are correlated with each other. As previous research has also shown, *Natural Reactions* correlates strongly negatively with *Conscientiousness* and *Extraversion*.

	O	C	E	A	N
O	1.000	-0.058	0.183	0.142	-0.022
C	-0.058	1.000	0.375	0.426	-0.612
E	0.183	0.375	1.000	0.173	-0.589
A	0.142	0.426	0.173	1.000	-0.313
N	-0.022	-0.612	-0.589	-0.313	1.000

6   DISC vs. Big Five

6.1   Item comparison

In the analysis of item-level correlations between the DISC and Big Five questionnaires, it was found that each DISC item has a content correct equivalent in the list of Big Five items. This contributes to the validity of the DISC questionnaire.

To clarify the similarities between DISC and Big Five at the item level, some telling item pairs are included below. Given is the DISC item with factor designation, the Big Five item with facet designation, and the correlation coefficient.

6.1.1   (D)ominance

DISC item: (D) *I enjoy taking a chance*
Big Five item - Extraversion - Facet: Excitement Seeking (E5): *I go out of my way to seek adventure*
Correlation: 0.325

6.1.2   (I)nfluence

DISC item: (I) *I always look on the bright side of life*
Big Five item - Extraversion - Facet: Positive Emotions (E6): *I look at the bright side of life*
Correlation: 0.486

6.1.3   (S)teadiness

DISC item: (S) *I am always ready to help others*
Big Five item - Agreeableness - Facet: Altruism (A3): *I love to help others*
Correlation: 0.357

6.1.4   (C)ompliance

DISC item: (C) *I like things to be very neat and tidy*
Big Five item - Conscientiousness - Facet: Orderliness (C2): *I don't like things to be a mess - I like to tidy up*
Correlation: 0.501

6.2   Correlations between DISC factors and Big Five factors.

Notable correlations between DISC factors and Big Five factors are *Extraversion* (Big Five) and *Compliance* (DISC). It is also notable that the factors *Openness to Experience* and *Conscientiousness* as a whole do not show high correlations with the DISC factors.

|	O	C	E	A	N
D	0.186	0.001	0.336	-0.392	-0.109
I	0.159	-0.055	0.543	0.067	-0.297
S	-0.172	0.069	-0.280	0.434	0.012
C	-0.203	-0.018	-0.624	-0.006	0.387

6.3 Correlations between DISC factors and Big Five facets.

The correlation table below shows the correlations between the 30 Big Five facets and the 4 DISC factors. The heatmap in Section 6.3. provides a clearer picture of the relationships between the Big Five facets and DISC factors.

	facets	D	I	S	C
O1	Openness to experience - Facet: Imagination	0.087	0.043	-0.124	-0.024
O2	Openness to experience - Facet: Artistic interests	0.055	0.095	-0.054	-0.101
O3	Openness to experience - Facet: Depth of emotions	-0.129	0.07	0.086	0.01
O4	Openness to experience - Facet: Willingness to experiment	0.317	0.269	-0.232	-0.402
O5	Openness to experience - Facet: Intellectual curiosity	0.208	0.056	-0.168	-0.14
O6	Openness to experience - Facet: Tolerance for diversity	0.114	0.038	-0.11	-0.065
C1	Conscientiousness - Facet: Sense of competence	0.134	-0.057	-0.072	-0.041
C2	Conscientiousness - Facet: Orderliness	-0.069	-0.071	0.039	0.111
C3	Conscientiousness - Facet: Sense of responsibility	-0.111	-0.056	0.18	0.012
C4	Conscientiousness - Facet: Achievement striving	0.128	0.039	-0.016	-0.173
C5	Conscientiousness - Facet: Self-discipline	0.131	0.031	-0.031	-0.156
C6	Conscientiousness - Facet: Deliberateness	-0.15	-0.116	0.175	0.116
E1	Extraversion - Facet: Warmth	0.071	0.54	-0.059	-0.516
E2	Extraversion - Facet: Gregariousness	0.144	0.526	-0.152	-0.501
E3	Extraversion - Facet: Assertiveness	0.455	0.241	-0.379	-0.4
E4	Extraversion - Facet: Activity level	0.355	0.163	-0.254	-0.329
E5	Extraversion - Facet: Excitement seeking	0.334	0.258	-0.3	-0.346
E6	Extraversion - Facet: Positive emotions	0.051	0.417	-0.024	-0.415
A1	Agreeableness - Facet: Trust in others	-0.156	0.243	0.164	-0.189
A2	Agreeableness - Facet: Sincerity	-0.243	-0.071	0.317	0.052
A3	Agreeableness - Facet: Altruism	-0.207	0.161	0.281	-0.166
A4	Agreeableness - Facet: Compliance	-0.38	0.025	0.371	0.078
A5	Agreeableness - Facet: Modesty	-0.327	-0.167	0.325	0.232
A6	Agreeableness - Facet: Sympathy	-0.182	0.082	0.214	-0.061
N1	Natural reactions - Facet: Anxiety	-0.149	-0.268	0.057	0.367
N2	Natural reactions - Facet: Angry hostility	0.175	-0.124	-0.242	0.134
N3	Natural reactions - Facet: Moodiness/Contentment	-0.128	-0.277	0.064	0.343
N4	Natural reactions - Facet: Self-consciousness	-0.264	-0.488	0.236	0.532
N5	Natural reactions - Facet: Self-indulgence	0.013	0.054	-0.107	0.039
N6	Natural reactions - Facet: Sensitivity to stress	-0.16	-0.253	0.065	0.359

6.4   Heatmap: Correlations between DISC factors and Big Five facets.

The heatmap below shows the correlation matrix The four DISC dimensions are blends of roughly two Big Five factors each. Of the Big Five factor 'Openness' the least is found in the DISC model.
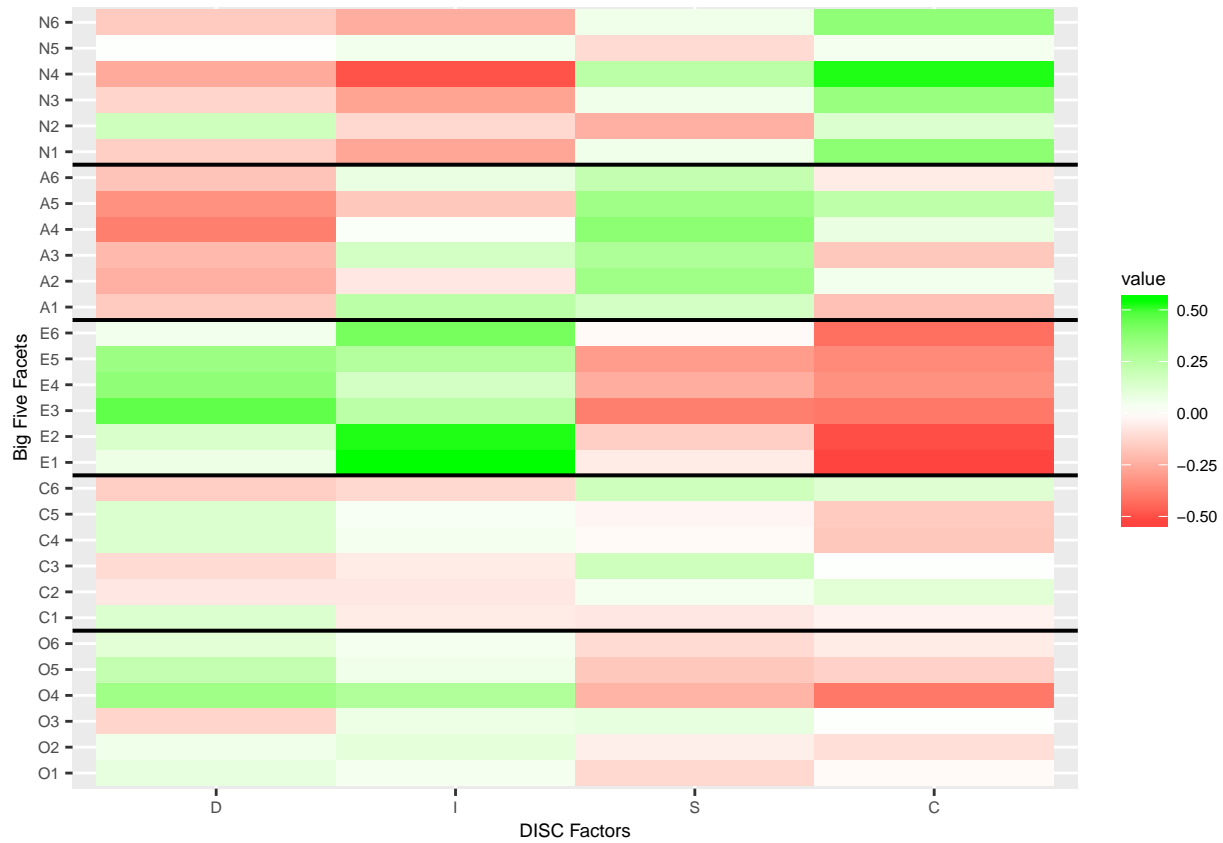
7   Conclusion

Validation DISC questionnaire and model
The DISC model is well known and widely used worldwide. This is despite the lack of rigorous scientific validation. The relative simplicity and positive approach of the model, plus many marketing efforts, especially in Anglo-Saxon countries, have contributed to this. To get a better grip on the quality of the questionnaire and the model as a whole, 123test BV conducted a study of its competitive validity with the Big Five personality model. Of the Big Five personality model, good validity is without doubt.

Concurrent validity
You can read in the concurrent validity study Big Five - DISC how the questionnaires and scales correlate with each other in detail and what that means. In summary, the DISC questionnaire consists entirely of valid questions, but they are then combined into a model that differs from the Big Five factors model. The four DISC dimensions are blends of roughly two Big Five factors each. The 'Openness' factor from the Big Five is the least represented in the DISC model.

Below is the DISC model. The D as an example is a combination of lower Extraversion and lower Agreeableness from the Big Five model. This then corresponds to a tenacious and task-oriented attitude.
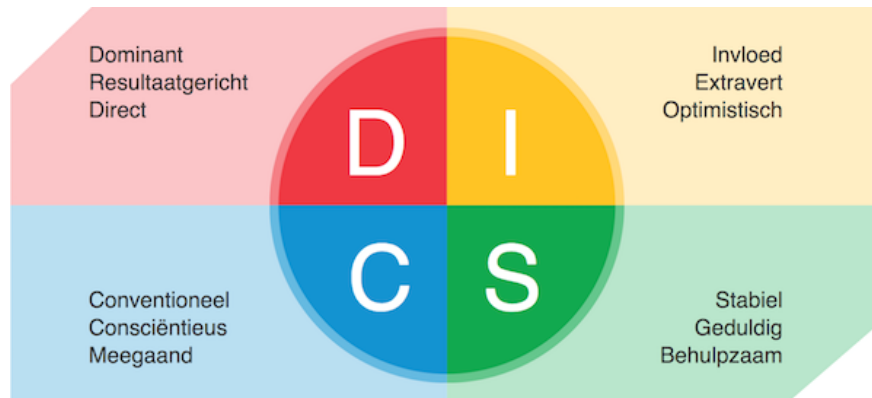

Figure 1: DISC Model

There is a lot of validity in the DISC questionnaire. It is a broad but not exhaustive measurement of a person's personality. There is a little more emphasis in the DISC model on interpersonal behavior compared to the Big Five model. The four dimensions (colors) are rough containers that can characterize very tangibly on their own but can also be somewhat caricatured at times. Depending on the purpose and setting of use, this does not have to be a problem. The fifteen profiles described offer more guidance than just 'your color'. The usefulness of DISC lies in its simplicity, availability and positive foundation. For group training and awareness, it is a popular and useful tool.

References

Jones, Nell T, Cathleen S & Hartley. 2013. "Comparing Correlations Between Four-Quadrant and Five-Factor Personality Assessments." *American Journal of Business Education* 6 (4). ERIC: 459–70.