TTI SI Style Insights® v Big 5 Personality Inventory: University Students Validation Study

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Abstract

Establishing concurrent or construct validity is a process, not an individual study. One way to establish different forms of validity it so run comparison studies against known, established psychometric assessments. In this study, the TTI Success Insights Style Insights® behavior assessment is compare with the Big Five Personality Inventory on a population of US university students. There are some differences noted in the levels of correlations between certain scales and a similar study conducted earlier on a different population. These differences are not of a magnitude that diminishes the argument of evidence of validity based on comparison with a well-known psychometric assessment.

1 Introduction

Establishing the reliability and validity of any psychometric assessment is a process that requires many different approaches. First and foremost there are myriad types of validity to consider. Moreover, there are differing viewpoints presented in contemporary literature as to what constitutes a valid assessment, see, for example, the different approaches outlined in [1], [2], and [9], among many others.

The aim of this report is to lay part of the framework for the construct validity of the TTI Success Insights (TTI SI) Style Insights® assessment. Style Insights is a version of the DISC model first proposed by Marston, [7]. The first version of a DISC style model as a psychometric assessment appears to have been Clarke's Activity Vector Analysis, [6]. Geier also developed a DISC style assessment called the Personal Profile System, see [3].

TTI Success Insights first acquired the DISC model in 1984, in good faith, from Thomas International. From that time to only a few years previous to the writing of this article, the primary focus of TTI SI was anything but psychometric assessments. As time has evolved, it has become more and more apparent to TTI SI that a comprehensive continuous improvement process, including periodic reviews of the reliability and validity of the TTI SI family of assessments, is paramount.

TTI SI has selected the Big 5 Personality Inventory (BFI) for this comparison study. One major consideration in choosing BFI for this study is that BFI is widely accepted as a valid assessment of personality. While TTI SI Style Insights® is not specifically a personality assessment, we do expect to find some correlations between the four scales of DISC and four of the five scales of the BFI. As is explained in this report, it is expected that none of the D, I, S, and C scales correlate with the Neuroticism scale of BFI.

TTI SUCCESS INSIGHTS®

2 Style Insights® to BFI Qualitative Comparison

As is stated in the introduction, Style Insights® is based on the DISC model first proposed by Marston and first developed into an assessment by Geier. The DISC model proposed a four factor model with the primary names of Dominance, Influence, Steadiness, and Compliance.

In contrast, BFI is a five factor model measuring personality factors of Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism. The first thing to note is that the work of Marston is titled "The Emotions of Normal People". Given that a basic definition of neuroticism is "... a personality trait that is characterized by, and predisposes, affected individuals to negative emotional states such as depression, anxiety, ...", one may reasonably argue that neuroticism is not something measured by the DISC model.

To make the remainder of the comparisons, we need to define what each of them represent. Dominance measures an individual's propensity to be both extraverted and task oriented. Influence measures a level of extroversion with people orientation. Steadiness measures a level of introversion combined with people orientation. Compliance measures one's propensity to be task oriented and introverted.

The following information regarding BFI constructs is taken from NEO® Inventories manual, see [8]. For Extraversion, the manual states "Extraverts are...sociable, but sociability is only one of the traits ... In addition to liking people and preferring large gatherings, [they] are assertive, active, and talkative ... They like excitement and stimulation..."

Comparing the DISC scales to Extraversion, we see that Dominance and Influence are most likely to correlate positively with BFI, but for different reasons. For example, a high D on the TTI SI DISC would be someone who is assertive, active, likes excitement, but may not necessarily "like" people. High D individuals are task oriented and would more likely see interactions with people as a means to an end. On the other hand, high I individuals are definitely viewed as social, talkative, and like excitement and stimulation, but are likely not assertive.

Rather that assertive, a high I is an influencer. The authors in [8] state that introversion should be seen as a lack of extraversion rather than its opposite. In that case, one would expect the Steadiness and Compliance scales to not correlate much with the Extraversion scale given the statement that these behavior styles have a tendency to be introverted. However, there are aspects of Steadiness, and especially Compliance, that may be the opposite of some aspects of Extraversion.

The Openness scale is defined in [8] as "active imagination, aesthetic sensitivity, attentiveness to inner feelings, intellectual curiosity, ..." Given this definition, we do not expect to see much in the way of correlations, with the possible exception of the Steadiness scale. Items measuring to the active imagination portion of the definition may capture some of the Influence dimension. It would not be surprising if there were some negative correlation with the Complaince scale.

This is a good place to interject some commentary how TTI SI views certain aspects of the constructs of the BFI. TTI SI has an assessment called Motivation Insights® . This assessment is designed to measure the "why" behind the behavior of an individual. In the definition of Openness, we see several links to our Motivation Insights® assessment. For example, one of the Motivators measured by our assessment is Aesthetic, directly related to a portion of Openness. Similarly, intellectual curiosity aligns with our Theoretical motivation construct.

The Agreeableness scale is defined in [8] "an agreeable person is fundamentally altruistic, sympathetic, eager to help, and believes others will be equally helpful in return." As noted in the previous paragraph, there are certain aspects of the personality constructs that TTI SI views as more motivation than behavior. Portions of

the definition of Agreeableness appear to align with the TTI SI Motivation constructs Aesthetic and Social. We would also expect to see some alignment with our Steadiness scale.

Finally, Conscientiousness is defined in [8] as "purposeful, strong-willed, determined, organizing, planning, ..." It is likely that there may be some low levels of correlation between Conscientiousness and Compliance and possibly with Dominance, although the relationship seems, prima facia, quite weak.

3   Methodology

TTI SI partnered with INDIGO, a non-profit group associated with TTI SI, to gather a set of university students who had previously taken our Behaviors assessment. We then administered a likert-type version of our Behaviors assessment along with the BFI. The resulting data set is comprised of 144 students from a US state university.

4   Demographics

Other than the fact that the entire population consists of students from a US based state university, little demographic information is provided in the data sets received from the university. This university is very serious about protecting the identity of its students, and rightly so. The only information available is a gender breakdown given that gender is automatically collected for purposes of generating TTI SI reports. In this particular study, we see 97 of the 144 respondents are males and 47 are females, or a 67% to 33% male to female ratio.

Given the differences in findings between this study and previous comparison studies conducted using the BFI, see [4, 5] as well as Section 5. For reference, the male to female ratio in [4] is 42% to 58%.

5   Analysis and Results

The analysis of this section is based on the standard correlation coefficient, denoted by the Greek letter ρ. Generally speaking, a correlation coefficient may take on any value between 1 and -1. Interpretation of correlation is as follows. A ρ value of ± 1 indicates perfect positive or negative correlation between the objects being studied. This indicates that the two objects are either identical or identically opposite. In the middle of these two extremes is $\rho = 0$ which indicates a completely random relationship between the objects.

In this study, we expect to see moderate to strong positive correlations between the corresponding scales of the two different DISC assessments. There is little consensus on what is an acceptable level of correlation and the definition is highly dependent on the application. In this setting, we are seeking to understand whether the scales of Style Insights appear to measure the same or similar constructs as the scales of the BFI.

The results of the Natural (Graph II) DISC scales' comparison to BFI are presented in Table 1.

Table 1: Style Insights® to BFI Correlation

	O	C	E	A	N
D	0.26	0.23	0.47		
I	0.18		0.45	0.35	
S				0.61	
C		0.38	-0.32	0.26	

It is interesting to note that the D,I,and C scales capture the largest portion of correlation across the largest spread of the BFI. This is not unexpected as the areas that TTI SI expected Steadiness to measure well against are, after closer inspection, measuring what TTI SI would call Motivation not Behavior. Since BFI is a self-coined personality measure, it is not surprising that el-

ements not measured by Style Insights are contained in BFI.

A slight surprise finding in the analysis is that Dominance does not correlate as significantly with Conscientiousness as expected. As noted earlier, the authors of this paper expected some correlation between these two scales based on the definitions provided in [8]. A detailed presentation of the item by item correlation is beyond the scope of this article. However, details are presented in a forthcoming, detailed presentation of all studies to date at TTI SI, see [5].

Comparing to an earlier study, see [4], we see slightly different behavior which may be attributed to a different breakdown by gender. There are two main differences between the the current study and the previous study based on TTI Value Added Associate (VAA) partnership in obtaining respondents for the study. The first main difference is that the VAA based study consists largely of working or working age adults compared to a population of university level students. The second main difference is a quite significant difference in gender breakdown.

The difference in gender breakdown shows a 42% to 58% male to female ratio while the university student population under consideration shows a 67% to 33% male to female breakdown. Given that the TTI SI populations shows a trend towards Influence and Steadiness for females compared to a Dominance and Influence trend for males.

Here in the student population, dominated by males, we see a decrease in the correlation of Steadiness with Agreeableness and lose significance of the correlation between Steadiness and Extraversion (negative relationship). We also see a lessening of the correlation between Dominance and Openness with a slight bump in the relationship between Dominance and Extraversion compared to the same relationships in the more female-centric data set from the earlier study. The hypothesized relationship between Compliance and Conscientiousness begins to show as will, noting that have a slightly higher tendency

towards the Compliance scale than females in the TTI SI population.

6   Summary and Future Work

This study shows that there exists relationships between the TTI SI Style Insights® assessment and the BFI. These relationships are slightly different that seen in earlier comparisons between Style Insights and BFI. There are three possible and reasonable explanations for the differences observed. First, the samples come from what are likely quite different populations, the first a subset of working or working age adults while the second subset a group of university students.

Second, the gender breakdown of the samples is quite different with a 42% to 58% male to female ratio in the first and a 67% to 33% male to female ratio in the second. Consistent with trends in the TTI SI population, slight differences in relationships with the BFI scales are noted.

Finally, neither sample is large enough to draw any conclusive generalizations, but may explain some small trends noted in the comparison data. There exists enough correlations at strong enough levels to make the claim for some strength of relationships between Style Insights® and BFI. At the same time, Style Insights® is specifically designed to measure behavior while BFI is a personality inventory. As noted earlier in this report, several items (subconstructs) in BFI appear to be more closely related to TTI SI Motivation Insights® which measures the motivation behind the behavior. An interesting follow on study is to make a comparison between BFI and TTI SI Motivation Insights® .

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