

TTISI Behavioral Assessment Test-Retest Pilot Study
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Introduction

The focus of this test-retest reliability report is on the TTISI behavioral assessment. There are several different types of reliability measures and each can be influenced by a different source of measurement error. Assessment developers are responsible for reporting reliability estimates that may impact their tool. In the case of TTISI behavioral assessment, we are most concerned with two reliability estimates; test-retest and internal consistency.

- **Test-retest reliability** indicates the repeatability of test scores with the passage of time. This estimate also reflects the stability of the characteristic or construct being measured by the test.

Some constructs are more stable than others. For example, an individual's reading ability is more stable over a particular period of time than that individual's anxiety level. Therefore, you would expect a higher test-retest reliability coefficient on a reading test than you would on a test that measures anxiety.

- **Internal consistency reliability** indicates the extent to which items on a test measure the same thing.

A high internal consistency reliability coefficient for a test indicates that the items on the test are very similar to each other in content (homogeneous). Tests that measure multiple characteristics are usually divided into distinct components. Manuals for such tests typically report a separate internal consistency reliability coefficient for each component in addition to one for the whole test.

Test-retest reliability refers to how consistently an assessment measures specific components over a time span. If a person were to take the test a second time, a highly reliable assessment would result in a similar test score.

There can be a number of reasons for an individual to not have the same score every time they take the test. Some of these reasons include:

- **Environmental factors.** Simple differences in the testing environment can impact performance, such as lighting, noise levels, room temperature or different test administrators.
- **Assessment Taker's State of mind.** Assessment outcomes can be influenced by a person's psychological and physical state. For example, differing mental states, anxiety, fatigue, motivation and level of alertness.

Factors such as these are sources of chance or random measurement error in the assessment process. Reliable assessment tools produce dependable, repeatable, and consistent information about people. In order to meaningfully interpret test scores and make useful employment or career-related decisions, you need reliable tools.

The reliability of a test is indicated by the **reliability coefficient**. It is denoted by the letter "r," and is expressed as a number ranging between 0 and 1.00, with r = 0 indicating no reliability, and r = 1.00 indicating perfect reliability. Do not expect to find a test with perfect reliability. Generally, you will see the reliability of a test as a decimal, for example, r = .70 or r = .83. The larger the reliability coefficient, the more repeatable or reliable the test scores. Table 1 serves as a general guideline for interpreting test reliability. Please keep in mind that reliability is only one of several assessment factors to be considered when judging usability. Do not accept or reject an assessment solely on the reliability coefficient.

Table 1. General Reliability Coefficient Guidelines

Reliability coefficient value	Interpretation
.90 and higher	Excellent
.80 - .89	Good
.70 - .79	Adequate
.60 - .69	May have questionable applicability
.50 - .59	Poor Reliability
Less than .5	Unacceptable Reliability

Methodology

In May of 2014, a check box was added to our online TriMetrix® DNA assessment questionnaire that asked if assessment participants were interested in participating in future TTISI research projects. Participants represent working adults, who were taking our assessment as either part of an employment application or were participating in an internal professional development program. Within a few days we had 123 participants for this pilot. The group was emailed a request to take an assessment. Please see appendix A for a copy of the original email, detailing that request.

As a result of the email, 86 participants out of the original 123 completed the assessment for the second time, thus allowing us to run a pilot assessment. Of the participants, 42 were female and 44 were male. The time span between the two assessments varied from as short as 17 days to as long as 52 days, with an average test-retest interval of 38 days. While data was collected on behaviors, motivators and soft skills, this report is confined to the TTISI behavioral component.

Result Summary and Conclusions

The first thing we learned is just how busy people are and that requesting them to retake an assessment in its entirety (a 30 minute plus request) is unrealistic. In the future, we will randomly contact a group and ask for no more than ten minutes to retake only one portion of the assessment. This finding is the reason why this report can only be defined as a pilot study. We simply did not get a large enough return to publish a full-blown study.

The most exciting outcome is the actual test-retest scores. Table two shows that all behavioral sub-scores fall within the Excellent to Good levels. Our pilot study also shows a slight increase in variability between natural and adapted styles. In other words, their natural style is more stable than their adapted, but even this slight difference is not a scientifically significant difference.

***Table 2. Test-Retest Reliability Scores for TTI Behaviors**

NATURAL BEHAVIORAL STYLE	Reliability
D	0.87
I	0.91
S	0.86
C	0.88

ADAPTED BEHAVIORAL STYLE	Reliability
D	0.86
I	0.91
S	0.84
C	0.84

*Data based on an n of 86 with an average of 38 days between the two assessments.

Appendix A Initial Email to Test-Retest Participants

Subject: TTI Success Insights Research Request for Opt-in Participants

Dear (Participant first name),

You recently indicated you were willing to help us with TTISI ongoing research and development projects. Your willingness to help is of tremendous value to our efforts, as we strive to make the best assessments in the field.

Below you will find a link to a TriMetrix® DNA assessment and several demographic questions that will allow us to analyze subgroupings of data. The survey takes about 30 minutes to complete and should be taken continuously in a quiet place with no distractions or other people around. We ask that you please **COMPLETE THIS ASSESSMENT BY JULY 18TH**.

Please click here to begin the assessment.

<https://www.ttisurvey.com/XXXXXXXXXX>

We carefully consider and limit each request we make, and you will not receive more than two per year.

As a result of your gift of time, you will receive a complete TriMetrix® DNA talent report. This report provides insights into your behaviors, motivators and your mastery of a list of 23 job-related skills. In addition, when the final research report has been prepared, you will receive a copy.

Informed consent information

Risks and/or Discomforts:

There are no known risks or discomforts associated with this research.

Confidentiality:

Your confidentiality will be strictly maintained. Only group-level (statistical) data will be used in scientific journals or professional presentations, and **no individual participant will be identified**. Your survey results will be delivered to Dr. Ron J. Bonnstetter, the TTISI Principal Investigator (PI). Your resulting file and all related analysis and dissemination files will be stored on the PI's business computer. Backup files will be stored on TTISI's password-protected internal server. The PI will maintain password-enabled spreadsheets that will correlate email addresses with the TTI filename. All hardcopies will be stored in a locked file cabinet in the PI's office and shredded once the files are no longer needed.

Compensation:

There will be no compensation for participating in this project beyond the extensive report provided as a courtesy for your participation.

Benefits:

In addition to the extensive behavior, motivators and soft skill PDF report, you will be sent a copy of the research findings.

Opportunity to Ask Questions:

You can ask questions about the project and get answers to your questions now or anytime during the study by contacting Dr. Ron Bonnstetter, ron@ttiltd.com.

Freedom to Withdraw:

You do not have to participate in this project. Even if you agree to participate, you can change your mind at any time. Lack of participation will not harm your relationship with TTISI or your relationship with Dr. Bonnstetter. If you withdraw, you will not lose any benefits that you are otherwise entitled to receive.

Completion of the assessment represents informed consent as described above.

Thank you again for your gift of time.