



TTI SUCCESS INSIGHTS®



Using Big Data to Better Appreciate Cultural Differences

A Research White Paper Examining the
Behavioral Assessments of 27 Countries

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“Cultural differences should not separate us from each other, but rather cultural diversity brings a collective strength that can benefit all of humanity.”

-Robert Alan

American writer, artist and social activist

INTRODUCTION

Behavioral assessments and neurology have taught us all people are unique based on a combination of nature and nurture. Our gene pool sets the stage and life-long personal experiences establish our individuality. TTI Success Insights research has identified a very similar outcome within nations due to their unique language and drawing from their shared cultural experiences. These differences cry out for their own expression.

As members of a global village and a global marketplace, we need not only to foster awareness of the unique diversity of culture, but also to engender understanding of those diversities. Greater understanding of unique world cultures and perspectives will lead to enhanced opportunities to collaborate and grow as individuals, as economies and as a world community. Whether in business or personal relationships, truly appreciating cultural diversity is a valuable pursuit. Today we have the rare opportunity to apply the latest research tools and technology to enhance our ability to assess and understand all cultures.

Since the mid-20th century, the assessment industry has worked to measure human behavior. In that time, many behavioral assessments were normed solely on the most convenient or readily available database. When this approach is used, the results are skewed in any number of ways. For example, using the most readily available database of white collar subjects working the United States provides a W.E.I.R.D. norm: Western, Educated, Industrialized, Rich and Democratic. In the field of computer programming, this would be referred to as “garbage in, garbage out” mentality. That is to say the meaning these data tools provide is only as accurate as the baseline data or norm. Therefore, each norm needs to be unique for each population it surveys. Therefore, a norm based on a U.S. workforce database cannot truly be considered representative of databases drawn from similarly positioned workforces in, for instance, Russia, or China or the Netherlands.

DATA ANALYSIS

TTI is in the unique possession of a massive database composed of hundreds of thousands of human behavioral reports representing over 90 countries. These in-depth data sets exist in 48 languages. To better understand the process used and the uniqueness identified from this data, we started analyzing 1,735,323 behavioral reports generated in the United States. To accomplish this, we first had to write proprietary software that allowed for massive data manipulation to capture the uniqueness of individuals.

In addition, to assure the integrity of the data, several additional steps were taken, including:

- *Bogus answers were removed from the database.*
- *People responding from outside the country being analyzed were removed by comparing computer location Internet Protocol address (IP).*
- *Random samples were drawn and compared to the total N from the natural style (in Graph 2) to assure confidence in the larger database. The U.S. database is much larger than the other countries, so the smaller random sample was used as a part of our comparative analysis, once we moved to country comparisons.*
- *Data was analyzed to assure we were examining at an unbiased group of working adults.*
- *Data from the TTI SI's Management-Staff and Team Building reports were analyzed both separately and combined to assure our database was not biased by specific jobs.*

- *Random selection of both male and female was compared. For example, we would compare a random sample of 50,000 males against a random sample of 50,000 females looking for any signs of discrimination or adverse impact.*
- *Each country was queried to identify any biases contained in their database, such as a heavy usage in sales or executives. When this was found, we looked for ways to collect a database more representative of the people in that country.*
- *Data from all countries was analyzed, compared and cleaned for more than a year by two of the study authors, Dave Bonnstetter and Ron Bonnstetter before final norming was implemented.*

We started with 1,735,323 people. The data from each country was scrutinized from a random sample of between 1,000 and 74,000. Each person made 96 decisions while completing TTI SI's behavioral assessment based on the DISC behavioral model (Dominance, Influence, Steadiness, Compliance). In 24 questions where they ranked their decisions from 1 to 4, with 1 being "most like me" and 4 being "least like me." This resulted in over 31 million decisions made by people in the U.S. The data was collected between January 2014 and May 2017.

Armed with this massive and extremely revealing data, we first designed different ways of examining the data, including:

- *Most popular to least popular (1-96)*
- *Top two choices (number of times it appeared as a No. 1 or No. 2 choice by percentage)*
- *Most popular D choices by those identified as High D*
- *Least popular D choices by those identified as High D*
- *This same process was repeated for those identified as High I, S, and C*
- *Cronbach's alpha and item analysis was run and good and bad cells were analyzed*
- *Top 5 most popular choices*
- *Top 10 most popular choices*
- *Top 20 most popular choices*
- *Top 30 most popular choices*
- *Top 48 most popular choices*
- *Bottom 5 least popular choices*
- *Bottom 10 least popular choices*
- *Bottom 20 least popular choices*
- *Bottom 30 least popular choices*
- *Bottom 48 least popular choices*

Once the process had been refined using the U.S. data, comparisons were made among 27 countries.

One of the first outcomes was the identification of several major anomalies in word selection between several of the countries. Our hypothesis was that these differences were either major cultural shifts or possible translation problems within the questionnaire. Words were identified and sent to individual countries for clarification. In each case, we were able to identify translation miscues that might otherwise have gone unnoticed. All this data analysis provided the data necessary for norming individual countries. To provide a better feel for the uniqueness of the U.S. and other countries, we are sharing some of our findings.

RESULTS

Bear in mind our primary goal is continued improvement of assessments and providing industry leadership in the realm of global norms. Therefore the following are findings that provide useful insights, and more complex findings have been embedded within our proprietary systems and intellectual property. While these results provide accurate impressions of cultural life-cycles, they are not meant to be used to stereotype or mis-characterize one country, but to shed general light on each culture's uniqueness.

FINDINGS

Table 1 provides the first clear indicator for why norming by country is so crucial.

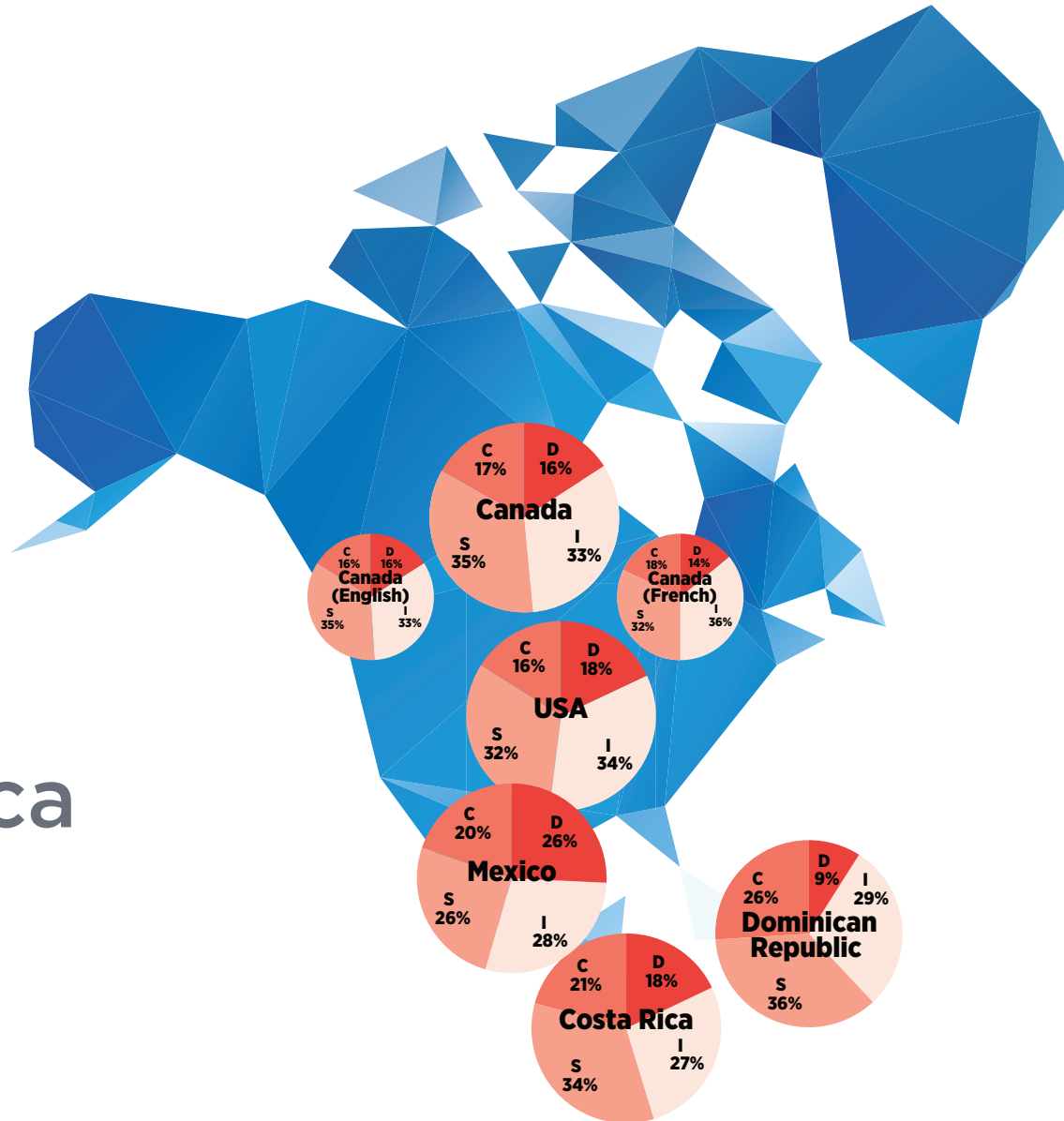
While some competitors actually admit their assessments are based on an unsubstantiated assumption each of the four quadrants house 25 percent of the population, we use data to assess the true composition.

Then, with the aid of proprietary software, we are able to differentiate not only within a country but between countries.

Table 1: Population Breakdown for Sample Countries

Table 1 provides a population breakdown for 27 countries. It immediately becomes clear that norming by country is essential, but each line of data speaks volumes concerning differentiations for marketing, sales approach, and even hiring.

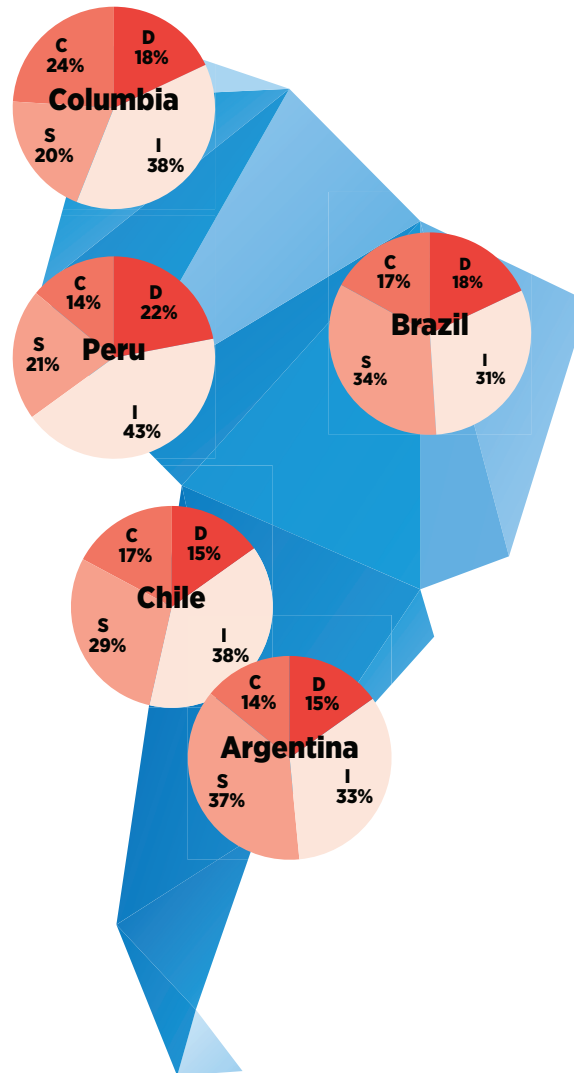
Country	% D	% I	% S	% C
Argentina	15	33	37	14
Australia/New Zealand	18	32	35	15
Brazil	18	31	34	17
Canada	16	33	35	16
Canada (English)	16	33	35	16
Canada (French)	14	36	32	18
Chile	15	38	29	17
China	13	34	35	18
Columbia	18	38	20	24
Costa Rica	19	29	30	22
Dominican Republic	9	29	36	26
Egypt	24	14	36	25
France	18	36	27	19
Germany	22	28	38	12
India (English)	20	28	33	18
Italy	21	34	31	14
Mexico	26	28	26	20
Netherlands	18	36	33	13
Peru	22	43	21	14
Russia	22	32	26	20
Singapore	16	26	39	19
South Africa	19	31	31	19
Spain	20	33	28	19
Sweden	19	34	32	13
Turkey	21	31	28	20
United Kingdom	19	36	32	13
USA	18	34	32	16



North America



South America





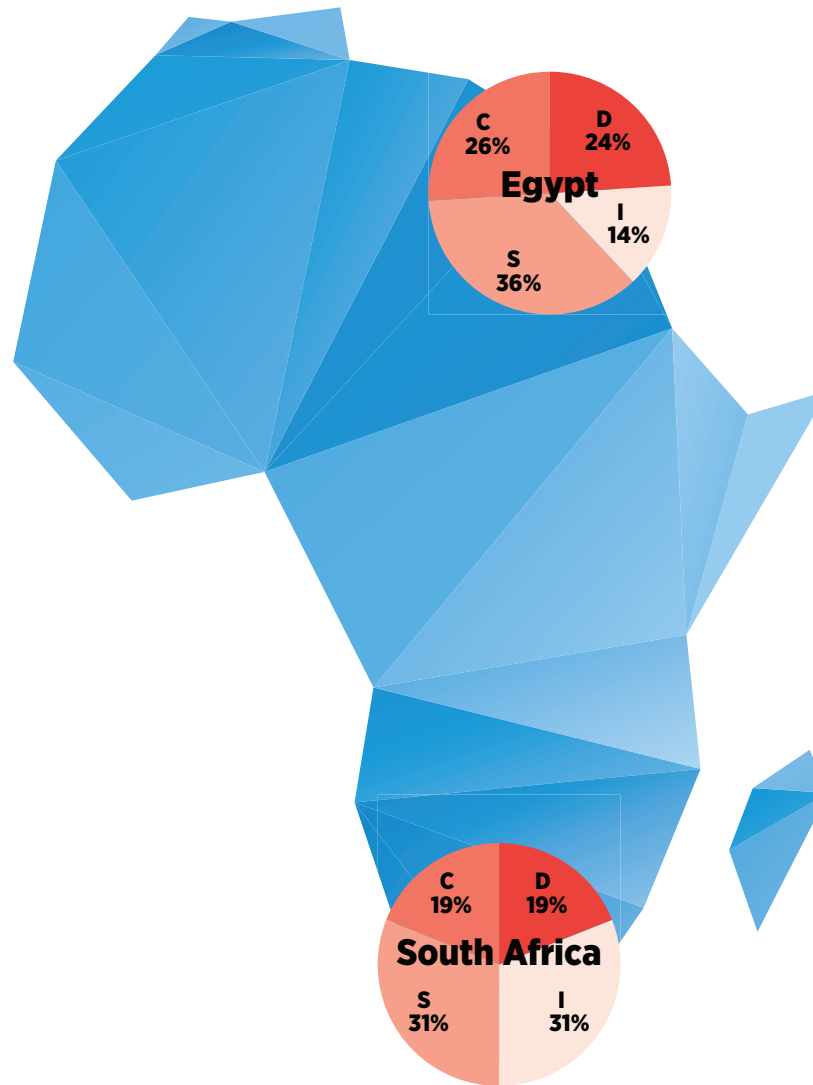
DISC AROUND THE WORLD

Europe





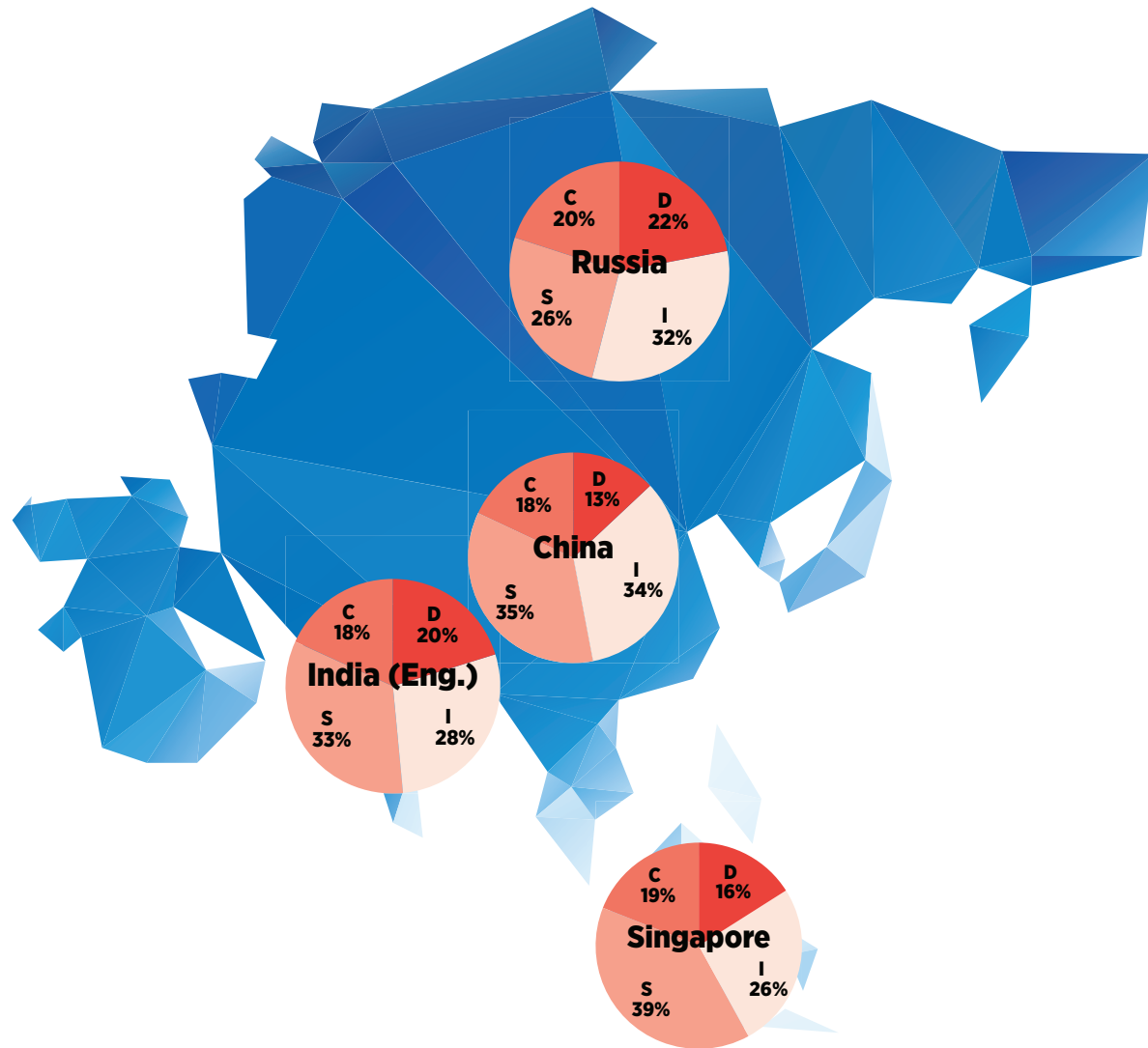
Africa





DISC AROUND THE WORLD

Asia





Australia

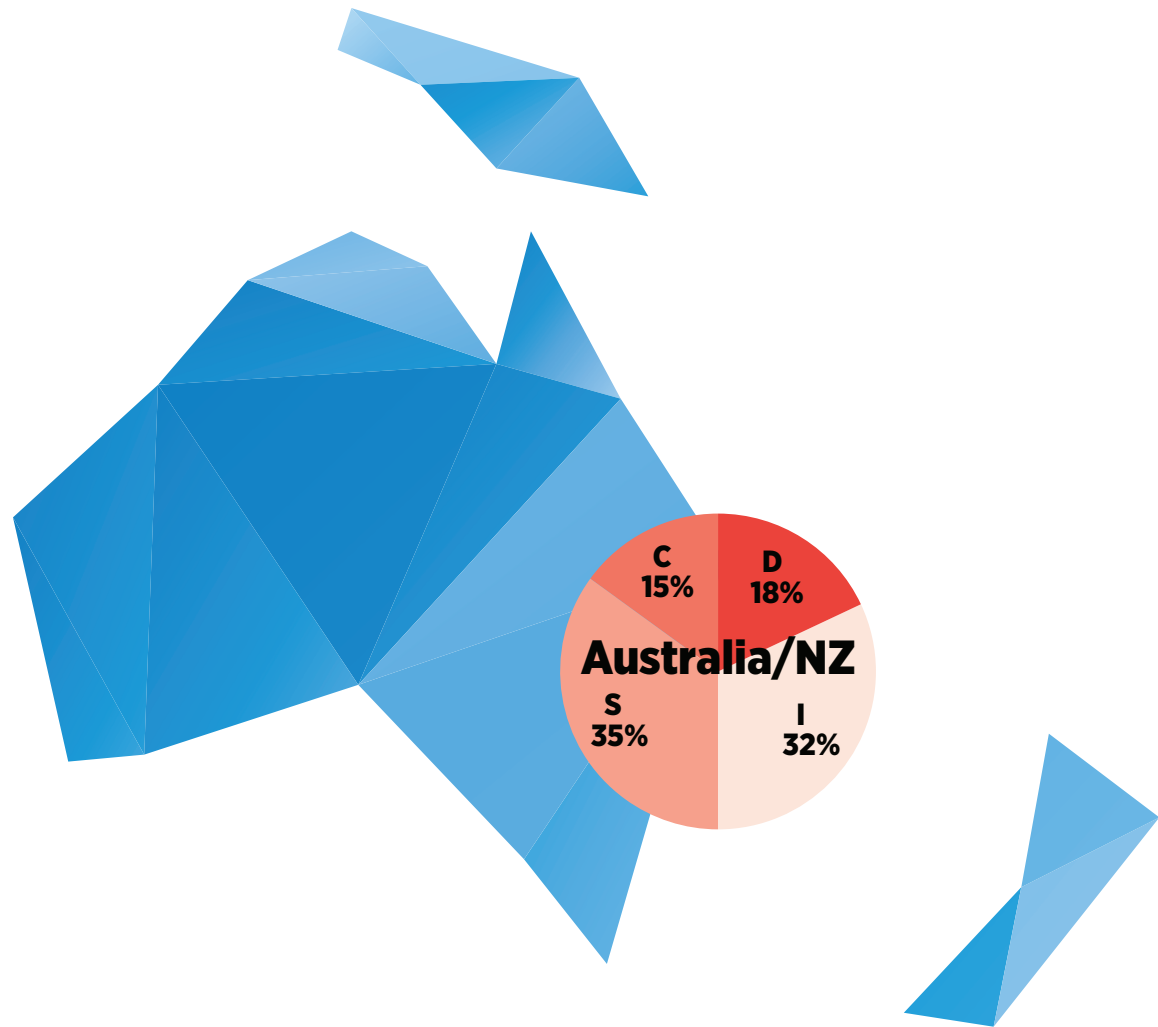


Table 2: Most Popular DISC Words

Ranking	USA	Russia
1 st	Aggressive, Challenger	Self-reliant, Independent
2 nd	Kind, Willing to give	Persuasive, Convincing
3 rd	Loyal	Force of Character
4 th	Positive, Confident	Aggressive, Challenger
5 th	Self-reliant, Independent	Decisive

Table 2 illustrates the differences between two cultures, U.S. and Russia, in the most frequently selected assessment word or phrase. The Russian choices echo the country's position as the country with a high concentration of "D" or Dominance behavioral styles.

Table 3: Least Popular DISC Words

Ranking	USA	Russia
1 st	Resigned, Gives in	Easy going
2 nd	Fearful, Afraid	Light hearted, Carefree
3 rd	Peaceful, Tranquil	Soft-spoken, Mild
4 th	Stubborn, Unyielding	Resigned, Gives in
5 th	Soft-spoken, Mild	Quiet, Composed

Table 3 illustrates the differences between two cultures, U.S. and Russia, in the least selected words or phrases in the behavioral assessment.

*“Peace is not unity
in similarity but
unity in diversity,
in the comparison
and conciliation
of differences.”*

–Mikhail Gorbachev

Table 4: Ranking of Words by Primary DISC Styles

How USA Primary D Respondents Ranked D Words

Most Popular:	Least Popular:
<i>Aggressive, Challenger</i>	<i>Stubborn, Unyielding</i>

How USA Primary I Respondents Ranked I Words

Most Popular:	Least Popular:
<i>Inspiring, Motivating</i>	<i>Light-hearted, Carefree</i>

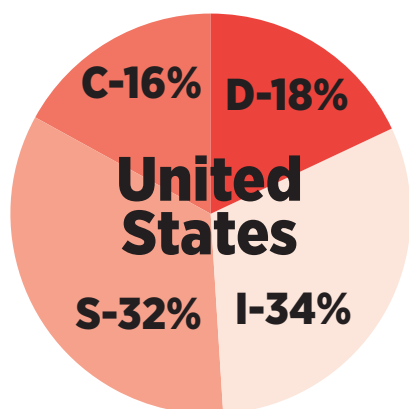
How USA Primary S Respondents Ranked S Words

Most Popular:	Least Popular:
<i>Kind, Willing to give</i>	<i>Moderate, Avoids extremes</i>

How USA Primary C Respondents Ranked C Words

Most Popular:	Least Popular:
<i>Logical</i>	<i>Resigned, Gives in</i>

Table 4 illustrates the most and least popular word or phrase choices on the assessments conducted with the U.S. population.



SUMMARY

While conducting research on our assessments has been an integral part of TTI SI from its beginning, it is important to articulate the benefits and applications of this research, especially with regard to norming.

NORMING

ALLOWS FOR COUNTRY CULTURE TO IMPACT VALIDITY

Assessments should not be used in isolation, nor should they be analyzed in a vacuum. Norming provides assessment users with a critical lens with which to view report results and a method for better understanding of individual behaviors in the content of the culture in which they live and work.

HAS MAJOR MARKETING IMPLICATIONS

Effective marketing depends on clearly identifying and profiling one's audience and addressing that audience. Country behavioral norms provide insight into the cultural disposition of that audience, which allows for better message differentiation. For example, conducting research into one's ideal customer may reveal a tendency toward D, I, S or C behavioral style. Comparing that ideal customer to the norm of that country will provide keen information into the prevalence of that customer and their behaviors and preferences for communicating. It would also enable the business to tailor marketing messages directly to that ideal customer.

PRODUCES MORE ACCURATE REPORTS

Reports are only as accurate as the norms they are based upon. Prior to the completion of this massive data analysis, unique individuals in other countries compared behavioral assessment results to a norm based on U.S. population only. Today, using norms developed for these countries, the reports are compared to a native norm, providing greater overall accuracy.

NORMING *continued*

PROVIDES MORE PREDICTIVE RESEARCH BY COUNTRY

If one is able to analyze the cultural behavioral style of a specific country, they can better understand the socioeconomic trends of that country. In addition, this leads to an ability to predict cultural trajectory much more accurately. This has implications for business forecasting, economics and international trade.

PROVIDES CORRECT DATA

We live in a new age of big data. But in order to maximize its use, it is essential data is correct. Given our vast database collected over the last three decades, we are well-situated to provide highly accurate data to customers who can and do use it daily.

IMPROVES CRONBACH'S ALPHA SCORES

Cronbach's alpha is commonly used as an indication of reliability of a psychometric test. Values vary from zero to 1, with higher values being more desirable. Prior to computerization, the industry standard for Cronbach's alpha was a score of .6 or above. But now with computerization, the rule of thumb is an assessment reliability of 0.70 or higher.

Another way of looking at these scores is to think of Cronbach's alpha as a measure of internal consistency. Cronbach's alpha determines the internal consistency or average correlation of items in a survey instrument to gauge its reliability.

The calculation of the Cronbach's alpha is not the end of the research, but provides insights for continuous improvement. When we norm by country, we are able to see those new language items that may not have translated correctly and, therefore, are adversely affecting the total or scale Cronbach's alpha score and make corrections, thus improving our predictability.

TTI SI is constantly calculating our reliability index. As an example, in 2003 our behavioral assessment set industry standards with 0.84 Cronbach's alpha. In 2014 our assessment has an improved 0.87 Cronbach's alpha. Our goal is continuous improvement, but this may be hard to beat.

PRODUCES A NEEDED INDUSTRY STANDARD

The assessment industry has long been in need of greater leadership in the realm of science and research, particularly in regard to norming studies. Assessments used in countries across six continents should not be based on the norms of one culture. We must demand more from our instruments.

Moreover, it is reasonable for individual assessment users, assessment distributors and end-users to demand greater transparency from their assessment companies when it comes to research.

While TTI SI has utilized its data, programming expertise and patents to continually improve its products and share strategies with its network, we recognize the needs of this industry. This study is part of an extended effort to set the highest standards of research, accuracy, and validation and to offer that transparency sorely needed in the assessment industry.

QUESTIONS TO ASK INTERNATIONAL BEHAVIORAL ASSESSMENT PROVIDERS

- *Do you have norms for each country your assessments are used in?*
- *What supporting materials and research do you have for those norms?*
- *How big is your norming database in each country?*
- *How often are your norms revisited?*
- *What percentage of people in each country falls into each DISC dimension?*
- *When was the most recent norm research conducted?*
- *What were your findings?*
- *Can you give me an example of how norming is applied to the accuracy of your assessments?*

NORMING continued

CONCLUSION

True research should not begin with a defined end in mind. This philosophy allows a way to conduct rich, revealing research. It is a philosophy that guides all TTI SI research. We never begin a research project with a set idea of the conclusions we will arrive at once all research is complete. Our intent is to let the data speak to us.

This research into norming provided us with a wide-ranging snapshot of different countries, carefully highlighting the uniqueness of each culture. While some conjectures can be made about each of the countries' cultural life-cycle and placement, we prefer to recognize as our major finding an opportunity to better understand — and communicate more effectively with — people from around the globe.

The core of our business has always been based around the idea we exist to celebrate the uniqueness of each individual and empower them to know themselves better, so that they may be happy and more satisfied in their life and work.

In the 21st century, the power of assessments to reach the farthest corners of the earth is real and present. Companies in China, work groups in Sweden and families in United Kingdom are using assessments to understand and power their lives and business in ways never done before. Therefore, as an industry, we must take special care to provide these users with a base of knowledge about their unique culture. We must provide an accurate framework to allow them to see clearly where their behavioral style falls within the culture of the country they live and work in.

In addition, we must commonly update these frameworks or norms. Regularly conducting norming research will allow us to understand the greater cultural life-cycle of that country, which could have implications for everything from economics to business relations to diplomacy.