



# **Psychometric Properties of the GlobeSmart Profile**

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## Executive Summary

The new *GlobeSmart Profile (GSP)* is a major upgrade to the instrument previously known as the *GlobeSmart Assessment Profile (GAP)*. The upgrade was the result of extensive psychometric analyses that focused on strengthening its psychometric properties, and this report presents the results of the analyses as well as an explanation of the processes used in updating the country placements in the GSP.

Design and development of the GSP included analyses of Dimension Reliability and Factorial Composition, as well as analyses of Construct and Content Validity. The results showed that the dimensions had high internal consistency reliability with estimates ranging from .700 to .799. The analyses of the Construct Validity and Content Validity also provided empirical support in each of these areas.

Based on the analysis, it can be said with confidence that the GSP has sound psychometric properties for use by individuals examining their preferred interaction styles and wanting to know how they compare with others on the selected dimensions of culture.

## I. Purpose

The purpose of this report is to explain the technical properties of the GlobeSmart Profile (GSP). The results of these analyses are presented and appropriate technical conclusions drawn. The report is organized into five sections: Overview of the GSP, Development Process, Psychometric Procedures, Results, and Summary.

## II. Overview of the GlobeSmart Profile (GSP)

The GSP is a cultural awareness tool. It helps individuals understand their own preferences and tendencies for interacting with others, and allows for comparisons with other individuals as well as with other cultures. It is meant to start discussions about the impact of culture on our preferred style of engaging with others.

The GSP is based on a previous Aperian Global instrument known as the GAP (GlobeSmart Assessment Profile) which was an adaptation of a highly reliable and valid research instrument developed by a leading cross-cultural researcher, Dr. David Matsumoto of San Francisco State University.

The GAP had five dimensions:

- Independent- Interdependent
- Egalitarianism-Status
- Risk-Restraint
- Direct-Indirect
- Task-Relationship

### Dimensions

These same five dimensions were maintained in the GSP (with the exception that the term Restraint was changed to Certainty as the word Restraint had a somewhat negative connotation). However, the definitions have been updated and made more mutually exclusive. Additionally, the items measuring each dimension were entirely new with two exceptions.

Thus, the GSP is operationally and psychometrically a new instrument. It maintains the linkage with the same research base as the GAP and the same conceptual framework (that is, the five dimensions) but defines and measures these dimensions in a slightly different manner.

The definitions for each of the five dimensions are presented below. Each dimension is defined in terms of an overall "theme" that presents the key conceptual question that the dimension answers. Then, each end of the dimension is defined in terms of specific characteristics and behaviors. Examples are provided for each end of the dimensions. Similarities to dimensions in the research base are provided in the notes below the dimension definition.

Independent	Theme/Definition	Interdependent
People at this end of this dimension tend to: <ul style="list-style-type: none"> <li>• Place great importance on individual identity</li> <li>• Derive identity from personal choices and achievements</li> <li>• Prefer taking action on one's own</li> </ul>	<b>How do I derive my identity?</b>	People at this end of this dimension tend to: <ul style="list-style-type: none"> <li>• Place great importance on group harmony and cooperation</li> <li>• Derive identity from group affiliation</li> <li>• Feel a sense of duty, obligation, and loyalty to ascribed groups</li> </ul>

**Notes:**

This dimension had its roots in elements of Hofstede's dimensions of *Individualism v. Collectivism* and *Masculinity v. Femininity*.

Egalitarianism	Theme/Definition	Status
People at this end of this dimension tend to: <ul style="list-style-type: none"> <li>• Be comfortable challenging the views of superiors</li> <li>• Be flexible about roles</li> <li>• Treat everyone much the same</li> <li>• Assume power and authority should be shared broadly among a group</li> </ul>	<b>What is my preference for how my group should be structured and power should be distributed?</b>	People at this end of this dimension tend to: <ul style="list-style-type: none"> <li>• Prefer not to challenge those above them</li> <li>• Be deferential to superiors</li> <li>• Adapt behavior depending on relative status</li> <li>• Assume power and authority should be reserved for a few members of a group</li> </ul>

**Notes:**

This dimension is related to Hofstede's concept of *Power Distance*.

Risk	Theme/Definition	Certainty
People at this end of this dimension tend to: <ul style="list-style-type: none"> <li>• Prefer rapid decision-making and quick results</li> <li>• Place great importance on flexibility and initiative</li> <li>• Value speed over thoroughness</li> </ul>	<b>How do I make decisions in uncertain or ambiguous situations?</b>	People at this end of this dimension tend to: <ul style="list-style-type: none"> <li>• Spend significant time on background research</li> <li>• Establish proper procedures before starting a project</li> <li>• Value thoroughness over speed</li> </ul>

**Notes:**

This dimension had its roots in Hofstede's notion of *Uncertainty Avoidance*.

Direct	Theme/Definition	Indirect
People at this end of this dimension tend to: <ul style="list-style-type: none"> <li>• Come to the point quickly</li> <li>• Be forthright in asking questions in most settings</li> <li>• Be comfortable making requests, giving direction, or disagreeing with others</li> <li>• Give negative feedback directly</li> </ul>	<b>How do I communicate requests, tasks, and feedback?</b>	People at this end of this dimension tend to: <ul style="list-style-type: none"> <li>• Spend time explaining the context before coming to the point</li> <li>• Avoid asking questions in public settings</li> <li>• Express disagreement in subtle ways</li> <li>• Give negative feedback indirectly</li> </ul>

**Notes:**

This dimension came from a variety of sources, and there are a number of issues that should be addressed when discussing this dimension. For example:

**Hierarchy:** The degree of directness in communication in many cultures will often be tied to one's position in an organization's hierarchy, i.e., whether one is "above" or "below" the people to whom a communication is addressed. The intent in our use of this dimension is to address the degree of directness in communication among people at similar levels of hierarchy rather than between superiors and subordinates.

**Explicit vs. Implicit:** Cultures also differ on how "explicit" or "implicit" they are; i.e. the degree to which communication is supposed to be precise and clear (explicit), or sophisticated and nuanced (implicit). Explicit is related to "direct," but "explicit" communicators may not necessarily be the most direct when giving feedback to others. U.S. Americans, for example, may be very explicit in their communication, but they are not nearly as direct or confrontational when giving feedback as are the Israelis, Dutch, Germans, or Russians.

Task	Theme/Definition	Relationship
People at this end of this dimension tend to: <ul style="list-style-type: none"> <li>• Place high value on reaching goals and objectives on schedule</li> <li>• Prioritize accomplishing tasks over maintaining relationships</li> <li>• Focus on what people achieve more than who they know</li> </ul>	<b>When working on new projects, do I prefer to address tasks first, or relationships first?</b>	People at this end of this dimension tend to: <ul style="list-style-type: none"> <li>• View time building relationships as key to achieving good results</li> <li>• Prioritize maintaining relationships over accomplishing tasks on time</li> <li>• Focus on who people know as much as what they themselves can achieve</li> </ul>

**Notes:**

This dimension had its roots in elements of Hofstede's concept of *Individualism v. Collectivism*.

## Survey Items

The GSP consists of 40 items. There are six items per dimension with the exception of Egalitarianism-Status (which has eight items) and Task-Relationship (which has nine items) dimensions. These 35 items are the items that are scored to produce the profiles provided to the users. In addition, five other items are included as experimental items but not scored. When sufficient data are available for these items they will be examined for possible inclusion in the next version of the GSP. A seven point Likert agreement scale was used as the response scale for the items, ranging from Strongly Disagree to Strongly Agree.

## Country Placements

The country placements in the GSP were derived from a combination of three data sources, each of which built on the previous one:

1. *Merged data of leading cross-cultural researchers:* As mentioned above, the GSP is based on the previous Aperian Global instrument known as the GAP. In the GAP, the country placements on the dimensions were derived from the merged data of leading cross-cultural researchers such as Hofstede, Schwartz, McCrae, and Inglehart. They were empirically derived, statistical averages of available country data on the five cultural dimensions as they existed in the research literature.
2. *GlobeSmart Profile User Data:* Since some of the original research used in deriving the country placements on the GAP dimensions is now a few decades old, in the development of the GSP an analysis was included of the data from over 700,000 users of the instrument (as of early 2014), each of whom filled out demographic items before completing the GAP survey. This user data was combined with the earlier research data and used to update a number of the country placements.
3. *Expert Judgment Data:* Finally, expert opinions from a dozen Aperian Global trainers and associates living and working in countries around the world was incorporated to make final adjustments to the country placements. There were three rounds of expert input in this revision process, with each round receiving higher levels of convergence on the placements of countries on the dimensions by the group of experts.

In spite of the use of these three data sets in arriving at the updated country placements on the GSP, it is important to note that these placements are not absolutes. When viewing country comparisons in GSP, a bell curve appears on the Profile chart. This is a reminder that while the country placements on each dimension are based on the data sets mentioned above, many people from a particular culture will fall to the left or to the right of the country average "plot" that is marked on the chart.

It is also useful to keep in mind that cultures do evolve over time, and typical behaviors along the selected dimensions of culture can change. Because of this, Aperian Global plans to continue to update the country placements in the GSP every few years.

### III. Profile Development Process

The process of developing the GSP started with an examination of the definitions of the previous dimensions in the GAP. This examination showed that the definitions needed to be updated and made more mutually exclusive. By doing this, the dimensions could be designed to be more independent and provide less redundant information. Further, interpretation of performance along the dimensions would be simpler and easier to understand.

Using the new definitions for the dimensions, specifically the dimension theme and the characterization of each end point of the dimension, sets of possible items were developed. The item development started with the previous item set. The existing items were compared with the new definitions and generally found not to be good candidates for inclusion in the GSP, and therefore, new items were developed. To some extent, research on similar dimensions was used to find potential items or modified such items to fit the new definitions. In many cases, new items were generated through a small group process of Content Experts (Subject Matter Experts) led by the author of this report.

#### **Clinical Pretests**

A series of three clinical pretests was conducted on the potential item set. The clinical pretests used internal Aperian Global personnel to provide the data. In the first two clinical trials, 10 people provided data. In the third trial slightly fewer than 20 people provided data. The primary focus of these trials was on item wording, development of instructions for the instrument and comparison of the results for the new GSP versus the previous GAP. Basic psychometric analyses were performed but because of the small sample size the results were viewed cautiously and taken as indicative and not definitive.

#### **Formal Pretests**

When the item pool appeared to be stable in terms of wording and understanding by users, two Formal Pretests were conducted. The first Formal Pretest included approximately 100 respondents from around the globe and represented a much more diverse group of respondents than those who had participated in the clinical pretests. Diversity in ethnicity, geographic location, occupation and organizational position was much more pronounced in the first Formal Pretest. Results for the psychometric analyses of this pretest resulted in some revisions to the item pool as some of the items did not function as they had in the clinical pretests. Following revision and finalization of the items, a second Formal Pretest was conducted. This second Pretest went out to 200 possible respondents around the globe. Over 190 people responded but not all with complete data. Data on 187 of these form the basis for the results reported here.

### IV. Psychometric Procedures

Four specific issues were addressed in establishing the psychometric properties of the GSP: Reliability of the Dimensions, Dimension Factorial Composition, Construct Validity, and Content Validity. The reliability of the dimension was investigated using Cronbach's alpha reliability (Cronbach, 1951)



estimate. This estimate has a range of 0 to 1, with .7 being normally considered the minimal acceptable level of reliability for psychological assessments (Nunnally, 1978). The alpha reliability estimate is a measure of the internal consistency of a set of items. That is, it indicates the degree to which all the items consistently measure individuals. Internal Consistency reliability is the most common form of reliability reported for psychological assessments.

Investigations of the Dimension Composition, Construct Validity, and Content Validity were each addressed using Exploratory Factor Analysis. Specifically, Principal Axis Factor Analysis was used with a criterion for retaining factors with an Eigenvalue greater than 1.0. A Varimax Rotation was used if appropriate (in cases where more than one factor was identified).

All respondents that had completed the GSP in early 2014 provided the data set. A total of 187 respondents were included in the data set. Only respondents with complete data were used in each analysis. All analyses were performed using the Statistical Package for the Social Sciences (SPSS) Version 22.

## V. Results

The results are presented separately for Dimension Reliability, Dimension Composition, Construct Validity, and Criterion Validity and Dimension Scaling and Descriptives.

### Dimension Reliability

The investigation of Dimension Reliability provides information on the degree to which items identified to measure a specific dimension are internally consistent. That is, the reliability estimate shows the degree to which performance on each item of the scale produces the same rank order of individuals. It should be noted that internal consistency reliability does not necessarily require unidimensionality for the scale, though this condition often exists in scales with high internal consistency. The importance of reliability for a dimension is that it provides information on how accurately performance is measured.

In order to perform the reliability analyses, it was necessary to have all the items scored in such a way that they would be consistent. That is, since three of the items were intended to measure one end of the dimension and the other three items were intended to measure the opposite and potentially contradictory end of the dimension, an individual should agree with three of the items and disagree with the other three items if they were being consistent. Thus, it was necessary to "recode" three of the items so that they would measure in the same direction as the other set of three items for the dimension. For convenience sake, it was decided that the items measuring the left hand side of the dimensions (Independence, Egalitarianism, Risk, Direct, and Task) would be the "high" end of the scoring scale. So the items for the opposite end of each dimension were recoded to make them consistent with the "high" end of the dimension. Thus, people who had higher dimension scores would be more likely to be Independent, Egalitarian, Risk-oriented, Direct, and Task-focused.

### A. Independent-Interdependent

The results for the six items measuring Independent-Interdependent are shown below.

The reliability estimate for this scale of 0.712 exceeds the minimum acceptable level of 0.70, so the scale can be considered as producing reliable and consistent measurements.

**Reliability Statistics**

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.712	.711	6

**Item Statistics**

	Mean	Std. Deviation	N
item1	5.5699	1.03347	186
Item2	3.4140	1.27581	186
item3	3.8925	1.37123	186
Recoded Item 5	2.2849	1.01847	186
Recoded Item 6	3.5269	1.40340	186
Recoded Item 7	3.2204	1.13414	186

**Inter-Item Correlation Matrix**

	item1	Item2	item3	Recoded Item 5	Recoded Item 6	Recoded Item 7
item1	1.000	.316	.181	.025	.370	.312
Item2	.316	1.000	.248	.291	.644	.351
item3	.181	.248	1.000	-.021	.159	.325
Recoded Item 5	.025	.291	-.021	1.000	.333	.371
Recoded Item 6	.370	.644	.159	.333	1.000	.450
Recoded Item 7	.312	.351	.325	.371	.450	1.000

**Summary Item Statistics**

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance
Item Means	3.651	2.285	5.570	3.285	2.438	1.173
Item Variances	1.478	1.037	1.970	.932	1.899	.165

## B. Egalitarian-Status

The results for the reliability investigation of the Egalitarianism-Status dimension items are shown below. In the formal pretests, seven items defined this dimension.

Again, the reliability estimate for this scale meets the minimum acceptable threshold, and the scale can be considered as producing reliable and consistent measurements.

**Reliability Statistics**

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.700	.697	7

**Item Statistics**

	Mean	Std. Deviation	N
item10	5.2406	1.43342	187
item11	5.7433	1.03092	187
item12	4.4278	1.62271	187
Recoded Item 14	4.1390	1.43006	187
Recoded Item 15	3.7807	1.24868	187
Recoded Item 16	4.7059	1.46798	187
item13	4.2941	1.54646	187

Inter-Item Correlation Matrix

	item10	item11	item12	Recoded Item 14	Recoded Item 15	Recoded Item 16
item10	1.000	.260	.381	.178	.240	.519
item11	.260	1.000	.117	.247	.119	.213
item12	.381	.117	1.000	.199	.153	.401
Recoded Item 14	.178	.247	.199	1.000	.249	.240
Recoded Item 15	.240	.119	.153	.249	1.000	.369
Recoded Item 16	.519	.213	.401	.240	.369	1.000
item13	.371	.152	.267	-.004	.198	.334

Inter-Item Correlation Matrix

	item13
item10	.371
item11	.152
item12	.267
Recoded Item 14	-.004
Recoded Item 15	.198
Recoded Item 16	.334
item13	1.000

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance
Item Means	4.619	3.781	5.743	1.963	1.519	.456
Item Variances	1.986	1.063	2.633	1.570	2.478	.276

### C. Risk-Certainty

The results for the six items measuring Risk-Certainty are shown below.

The reliability estimate for this dimension of 0.770 exceeds the minimum acceptable level of 0.70, so the scale can be considered as producing reliable and consistent measurements.

**Reliability Statistics**

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.770	.769	6

**Item Statistics**

	Mean	Std. Deviation	N
item18	4.4492	1.54549	187
item19	5.1604	1.23390	187
item20	3.1658	1.37149	187
Recoded Item 22	3.3422	1.43702	187
Recoded Item 23	2.5615	1.05760	187
Recoded Item 25	3.0963	1.35652	187

**Inter-Item Correlation Matrix**

	item18	item19	item20	Recoded Item 22	Recoded Item 23	Recoded Item 25
item18	1.000	.329	.376	.468	.124	.361
item19	.329	1.000	.213	.169	.186	.235
item20	.376	.213	1.000	.364	.447	.766
Recoded Item 22	.468	.169	.364	1.000	.262	.463
Recoded Item 23	.124	.186	.447	.262	1.000	.599
Recoded Item 25	.361	.235	.766	.463	.599	1.000

**Summary Item Statistics**

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance
Item Means	3.629	2.561	5.160	2.599	2.015	.948
Item Variances	1.803	1.119	2.389	1.270	2.135	.193

#### D. Direct-Indirect

The results for the reliability investigation of the Direct-Indirect dimension items are shown below.

Again, the reliability estimate for this dimension exceeds the minimum acceptable threshold, and the scale can be considered as producing reliable and consistent measurements.

**Reliability Statistics**

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.799	.801	6

**Item Statistics**

	Mean	Std. Deviation	N
item26	4.7527	1.34892	186
item27	4.8065	1.37356	186
item29	4.7419	1.40580	186
Recoded Item 30	4.0430	1.46611	186
Recoded Item 31	4.8011	1.47710	186
Recoded Item 33	4.0753	1.52625	186

**Inter-Item Correlation Matrix**

	item26	item27	item29	Recoded Item 30	Recoded Item 31	Recoded Item 33
item26	1.000	.584	.608	.148	.455	.316
item27	.584	1.000	.570	.364	.421	.484
item29	.608	.570	1.000	.234	.389	.498
Recoded Item 30	.148	.364	.234	1.000	.204	.474
Recoded Item 31	.455	.421	.389	.204	1.000	.280
Recoded Item 33	.316	.484	.498	.474	.280	1.000

**Summary Item Statistics**

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance
Item Means	4.537	4.043	4.806	.763	1.189	.138
Item Variances	2.057	1.820	2.329	.510	1.280	.038

## E. Task-Relationship

The reliability results for the Task-Relationship dimension items are presented below.

Finally, the reliability estimate of 0.732 for this scale exceeds the level of acceptable reliability as well and can be considered as producing consistent and reliable measurements.

**Reliability Statistics**

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.732	.726	6

**Item Statistics**

	Mean	Std. Deviation	N
item34	4.1022	1.45390	186
item35	5.6398	1.19201	186
item38	3.7634	1.41725	186
Recoded Item 40	2.6559	1.35163	186
Recoded Item 42	3.0323	1.30240	186
Recoded Item 43	2.6720	1.25417	186

**Inter-Item Correlation Matrix**

	item34	item35	item38	Recoded Item 40	Recoded Item 42	Recoded Item 43
item34	1.000	.177	.563	.288	.389	.342
item35	.177	1.000	.266	.100	.063	.112
item38	.563	.266	1.000	.276	.335	.415
Recoded Item 40	.288	.100	.276	1.000	.424	.517
Recoded Item 42	.389	.063	.335	.424	1.000	.334
Recoded Item 43	.342	.112	.415	.517	.334	1.000

**Summary Item Statistics**

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance
Item Means	3.644	2.656	5.640	2.984	2.123	1.301
Item Variances	1.773	1.421	2.114	.693	1.488	.069

## Dimension Factor Composition

To determine whether the items on a dimension were measuring a single dimension or construct, an Exploratory Factor Analysis was applied to each set of dimension items. Since the items for a dimension were designed to measure two ends of a bipolar dimension it would not be at all surprising if the factor analysis indicated that more than a single factor would be needed to explain performance. The results of the five factor analyses (one each for Independence-Interdependent, Egalitarianism-Status, Risk-Certainty, Direct-Indirect, and Task-Relationship) showed a consistent pattern of results.

In each case, two factors were indicated by examining the eigenvalues of the solutions. In other words, there were two eigenvalues greater than one in each of the Principal Axis factor analyses. In all cases, the first factor accounted for the largest amount of variance ranging in value from 37% in the case of Egalitarianism-Status to almost 51% for Direct-Indirect. The second factor in the solution ranged in value from slightly less than 16% to 18%. In terms of overall variance accounted for the values ranged from 52% (Egalitarianism-Status) to 68% (Direct-Indirect). The pattern of loadings was nearly the same in all five solutions. Typically all items had a significant loading on the first factor and then only one of the items had a significant on the second factor. In the case of Direct-Indirect, there were two items with a significant secondary loading.

Given the design of the instrument, a balance of items measuring two opposite ends of a single dimension, the factor analysis results are not surprising. In fact, they are better than they could have been in that almost all of the items had their largest loading on the first factor. Typically, only one of the items had a significant secondary loading. The findings from these analyses help explain why the internal consistency reliability estimates, while exceeding the accepted standard for psychological assessments, were not higher.

## Construct Validity

Construct Validity is normally established through empirical evidence supporting the model that was used to build the instrument. For the GSP, this model was composed of five dimensions of intercultural behavior: Independence-Interdependence, Egalitarianism-Status, Risk-Certainty, Direct-Indirect, and Task-Relationship. It is important to note that the model assumed that these dimensions were fairly independent of each other in a statistical sense. The model thus implies that performance on the five scales is independent of each other, so that performance on a dimension can be interpreted without considering performance on the other dimensions.

### A. Exploratory Factor Analysis

The initial analytic approach to establishing the Construct Validity of the GSP was to perform an Exploratory Factor Analysis using a Principal Axis Factor Analysis followed by a Varimax Rotation. This approach assumes an orthogonal or independent set of dimensions for the GSP. It is a useful initial method for determining the number of factors and to explore the instrument's factorial composition.

The results of this analysis showed that the best factorial solution for the GlobeSmart Profile has five factors. Again, the criterion used to determine the number of factors was an Eigenvalue greater than 1.0. This supports the hypothesis of the five dimensions of the GSP Model. The results of the Varimax



Rotation provided a very clear picture of the hypothesized dimensions. All of the items loaded on their hypothesized factors. In the Figure below, the highlighted loadings are the hypothesized loadings for the five dimensions. With two exceptions (item 14 and item 35) the loadings are all greater than .30, the accepted criteria for statistical significance. Even in the two cases, the loadings are the largest of any loading for those items. Factor 1 corresponds to the Direct-Indirect dimension. Factor 2 corresponds to the Risk-Certainty dimension. Factor 3 corresponds to the Independence-Interdependence dimension. Factor 4 is the Task-Relationship dimension. Factor 5 is the Egalitarianism-Status dimension.

Another important aspect to note in these results is there were few instances where an item had a significant loading on a factor other than its hypothesized factor. This is more strong evidence supporting the construct validity of the GSP.

### Factor Analysis Results for the Five GlobeSmart Profile Dimensions

**Rotated Factor Matrix<sup>a</sup>**

	Factor				
	1	2	3	4	5
item1	.194	.255	.369	-.093	.203
Item2	-.032	.091	.664	.114	.079
item3	-.158	.265	.198	.121	.189
item10	.037	.016	.064	-.049	.733
item11	.271	.090	.242	.015	.311
item12	.146	-.114	-.057	.059	.537
item13	-.115	.082	-.013	-.018	.546
item18	.308	.560	-.022	.057	.011
item19	.235	.395	.033	-.240	-.009
item20	-.101	.807	.001	.024	-.002
item26	.726	-.039	-.168	.095	.032
item27	.802	.084	.037	.005	.099
item29	.754	.100	.122	.111	-.008
item34	.144	-.037	-.032	.635	-.140
item35	-.024	.145	-.019	.268	.178
item38	-.002	.116	-.002	.683	-.090
Recoded Item 5	.084	.006	.413	.173	-.016
Recoded Item 6	-.033	.107	.836	.035	.005
Recoded Item 7	.122	.195	.557	.115	.067
Recoded Item 14	.222	.083	.220	-.230	.222
Recoded Item 15	.066	-.019	.195	-.199	.334
Recoded Item 16	.123	-.078	.083	-.061	.677
Recoded Item 22	.115	.503	.205	.071	.033
Recoded Item 23	-.184	.513	.212	-.059	-.083
Recoded Item 25	-.117	.814	.082	.001	-.060
Recoded Item 30	.378	-.062	.217	.010	.076
Recoded Item 31	.522	-.163	-.072	-.045	.211
Recoded Item 33	.608	.059	.166	-.068	-.073
Recoded Item 40	-.043	-.113	.204	.580	-.045
Recoded Item 42	.113	-.051	.222	.520	-.015
Recoded Item 43	-.061	.010	.114	.647	.027

Extraction Method: Principal Axis Factoring.  
 Rotation Method: Varimax with Kaiser Normalization.  
 a. Rotation converged in 6 iterations.

Another piece of evidence for the nature of the new GSP dimensions is the inter-correlation of the five dimensions. As mentioned above, it was designed so the dimensions would be relatively uncorrelated with each other. The table below shows the correlations between the five dimensions of the New GSP.

New GS Profile					
	II Dimension	ES Dimension	RC Dimension	DI Dimension	TR Dimension
II Dimension	1	.204**	.287**	.080	.194**
ES Dimension		1	.030	.225**	-.095
RC Dimension			1	.066	.006
DI Dimension				1	.052
TR Dimension					1.000

The results show small correlations between the dimensions. While some of the correlations are statistically significant that is due to the large sample size. None of the correlations account for as much as nine percent of the variance. For all intents and purposes, the dimensions can be considered independent.

The final piece of evidence for the Construct Validity of the GSP is its correlation with the previous GAP. The table below shows the correlations between the dimensions of the previous GAP with those of the new GSP.

	New GSP and Previous GAP				
	II Dimension	ES Dimension	RC Dimension	DI Dimension	TR Dimension
II Dimension	.499**	.149*	.099	.162*	-.311**
ES Dimension	.227**	.391**	.232**	.271**	-.024
RC Dimension	.432**	.306**	.254**	.093	-.209**
DI Dimension	.392**	.547**	.600**	.676**	-.161*
TR Dimension	-.033	-.016	-.103	.094	-.281**

The results in the table show statistically significant correlations between the corresponding dimensions in the previous GAP and new GSP. The correlations are actually stronger than those between the dimensions in the GSP. The results support the construct validity of the GSP but also shows that the GSP measures other attributes than the previous GAP. That is, since the correlations are all low to modest (the largest is .676 or 46% of the variance), the GSP items are measuring attributes other than just what the previous GAP measured. This finding is consistent with the new definitions of the dimensions and the new items.

## B. Confirmatory Factor Analysis

In light of the very clear and compelling results from the Exploratory Factor Analysis and in particular the Varimax Rotation, it was deemed unnecessary to perform a formal Confirmatory Factor Analysis. A

Confirmatory Factor Analysis approach is selected as the appropriate analytic technique when the Exploratory Results are unclear or when formal hypothesis testing of the model is required. This technique allows for specification of the specific measurement model and tests the degree to which the model is consistent. Typically, the analysis is performed using LISREL (Jöreskog & Sörbom, 2000).

### **Criterion Validity**

Evidence of Criterion Validity is important because it supports the use of the assessment to identify good performers from poor performers or to predict good performance. Since the GSP is an awareness tool and not meant to be used as a diagnostic tool nor for development decisions, Criterion Validity was not addressed at this time. Should the use of the GSP change in the future so that it is applied in such areas, then appropriate Criterion Validity analyses and studies will need to be undertaken to document the GSP properties in this regard.

### **Dimension Scaling and Descriptives**

The results of the GSP were scaled so that each dimension would be put on the same numerical scale. This scale had a mean of 5 and standard deviation of 1.5. To derive an individual's scale score the following process was applied:

1. The dimension score was calculated by taking the mean of the item values that identified the specific dimension. This calculation used all non-missing item values and for items that defined the right hand side of the dimension it was their recoded values.
2. The dimension score was then converted into a standard score (mean of zero and standard deviation of 1).
3. The standard scores were then placed on the dimension scale by multiplying by 1.5 and adding 5, so that the score distribution would have a mean of 5 and a standard deviation of 1.5. In a Normal Curve distribution, this would produce an effective range of score values from zero to 10 . \*

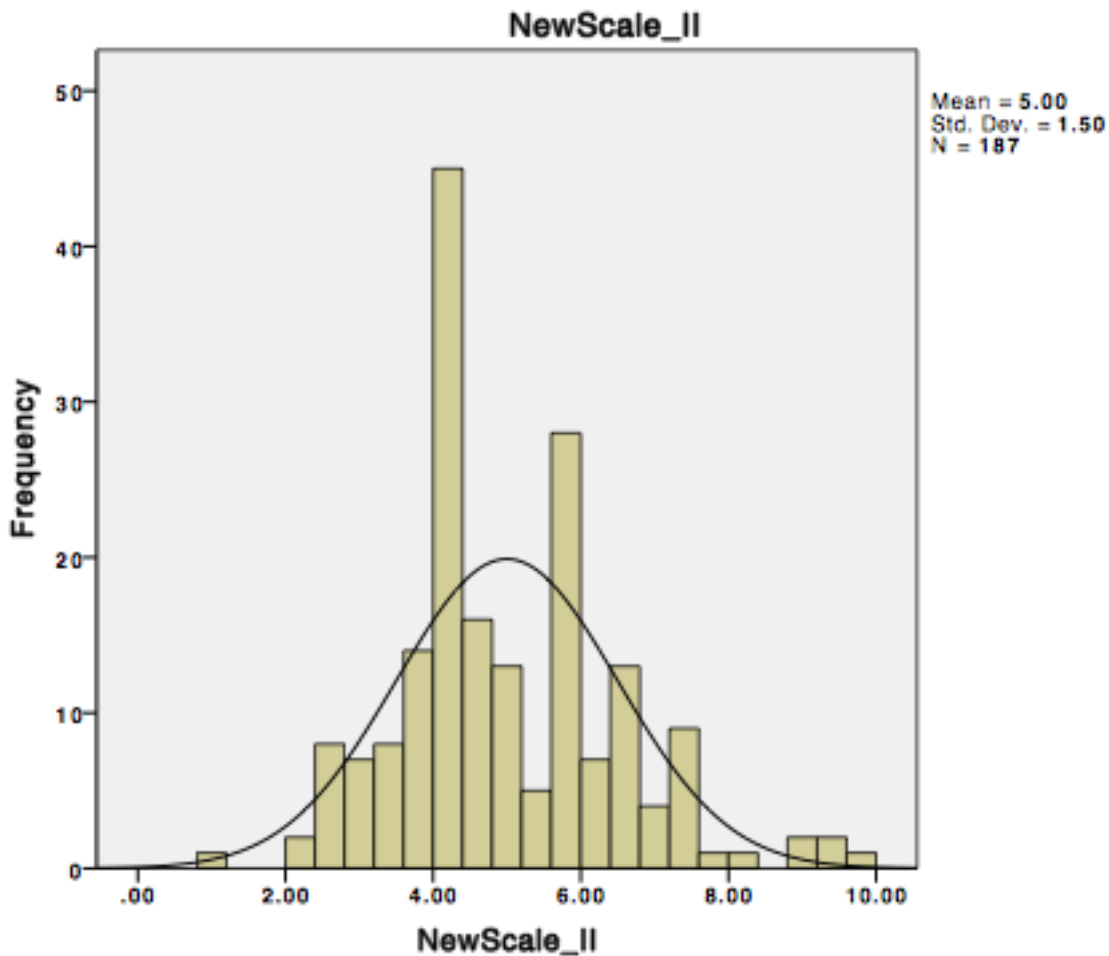
\* Note: The display of an individual's scores in the GSP chart is further modified so that only values between 1 and 9 are actually plotted in the profile chart. Scores less than 1 are plotted as 1, and scores greater than 9 are plotted as 9.

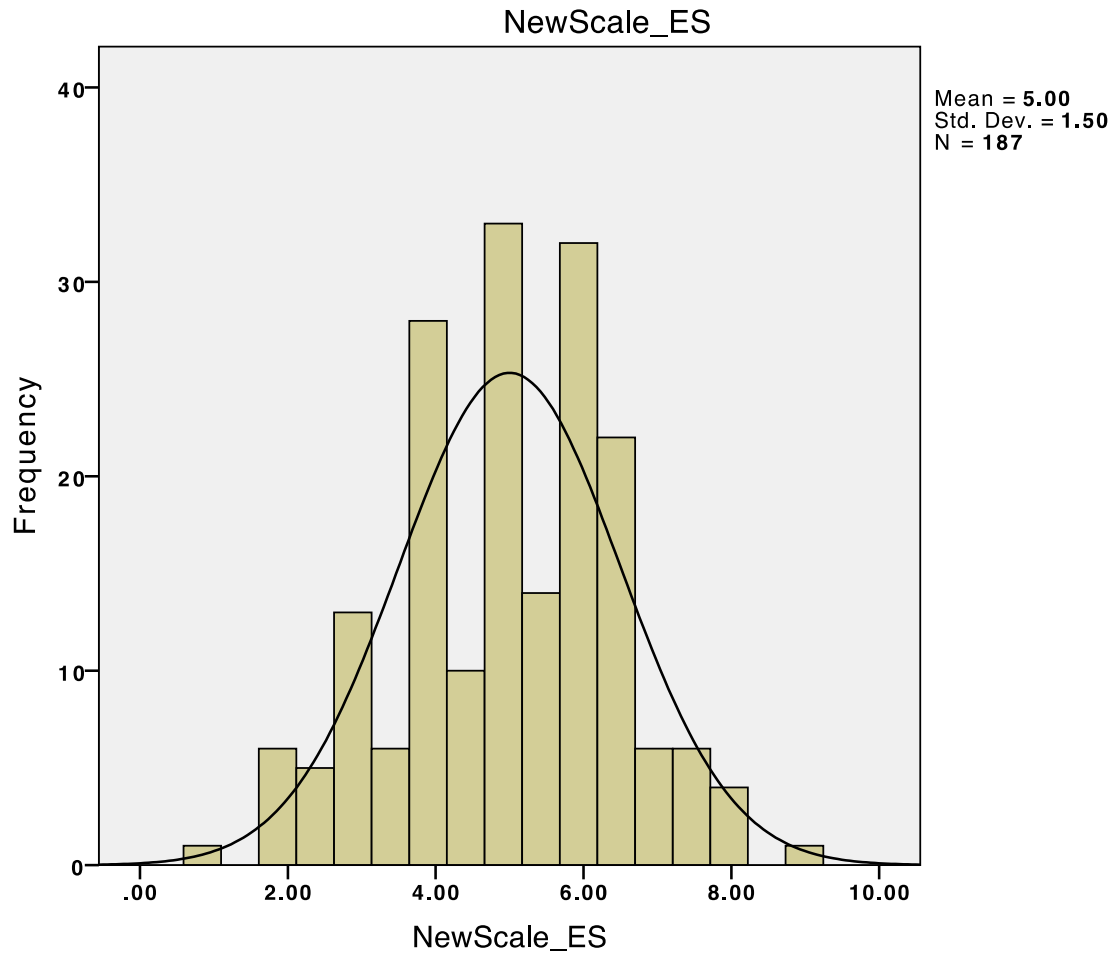
A series of simple descriptive analyses was performed to examine the characteristics of the scales for each dimension as well as plots comparing the actual data distribution on the scales versus a normal curve distribution. The results are provided in the table and charts below.

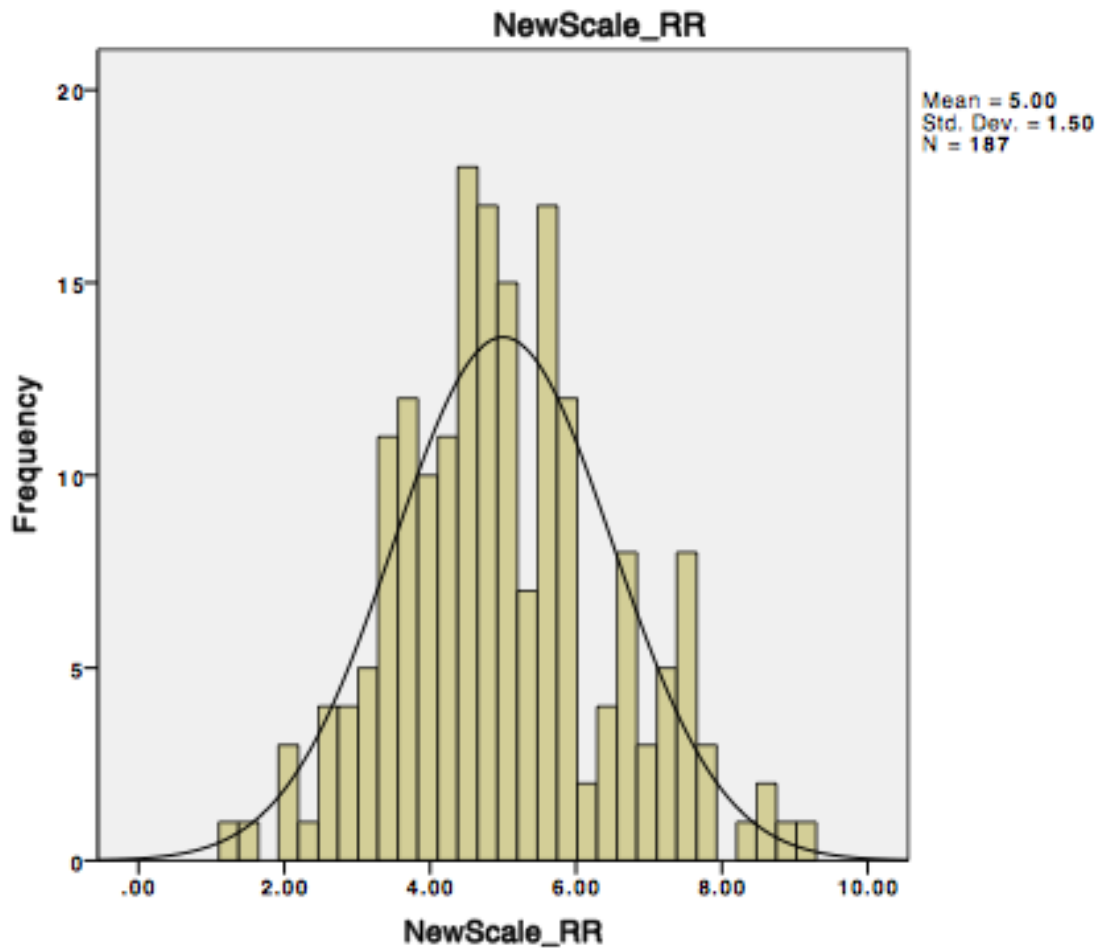
Descriptive Statistics

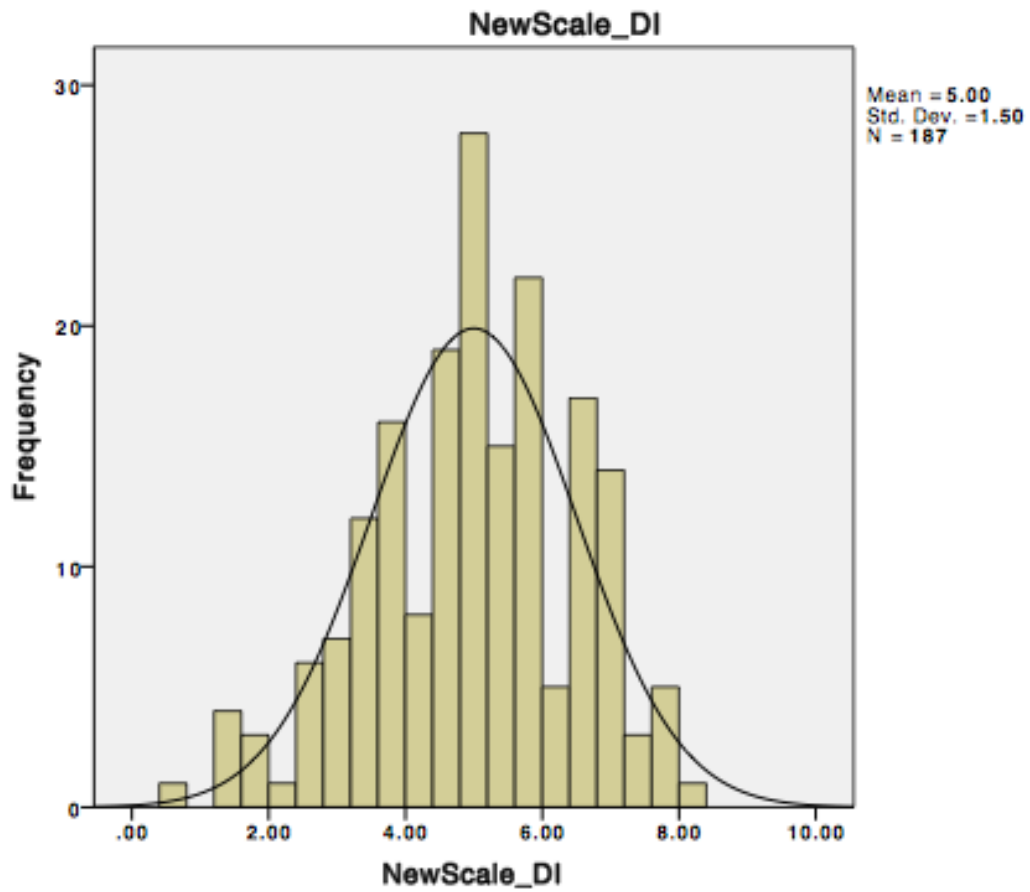
	N	Minimum	Maximum	Mean	Std. Deviation	Skewness
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic
NewScale_II	187	1.17	9.83	5.0000	1.50000	.591
NewScale_ES	187	.84	8.99	5.0000	1.50000	-.149
NewScale_RR	187	1.24	9.16	5.0000	1.50000	.318
NewScale_DI	187	.74	8.15	5.0000	1.50000	-.335
NewScale_TR	187	1.87	9.35	5.0000	1.50000	.285
Valid N (listwise)	187					

The results show that the scaling accomplished what was intended, producing score distributions that had a mean of 5 and standard deviation of 1.5 with scores ranging from zero to 10. The skewness statistic shows that the distributions are not perfectly normal in shape, but are not highly skewed. The charts below provide further information on the empirical score distributions and how they compare to the Normal Curve.

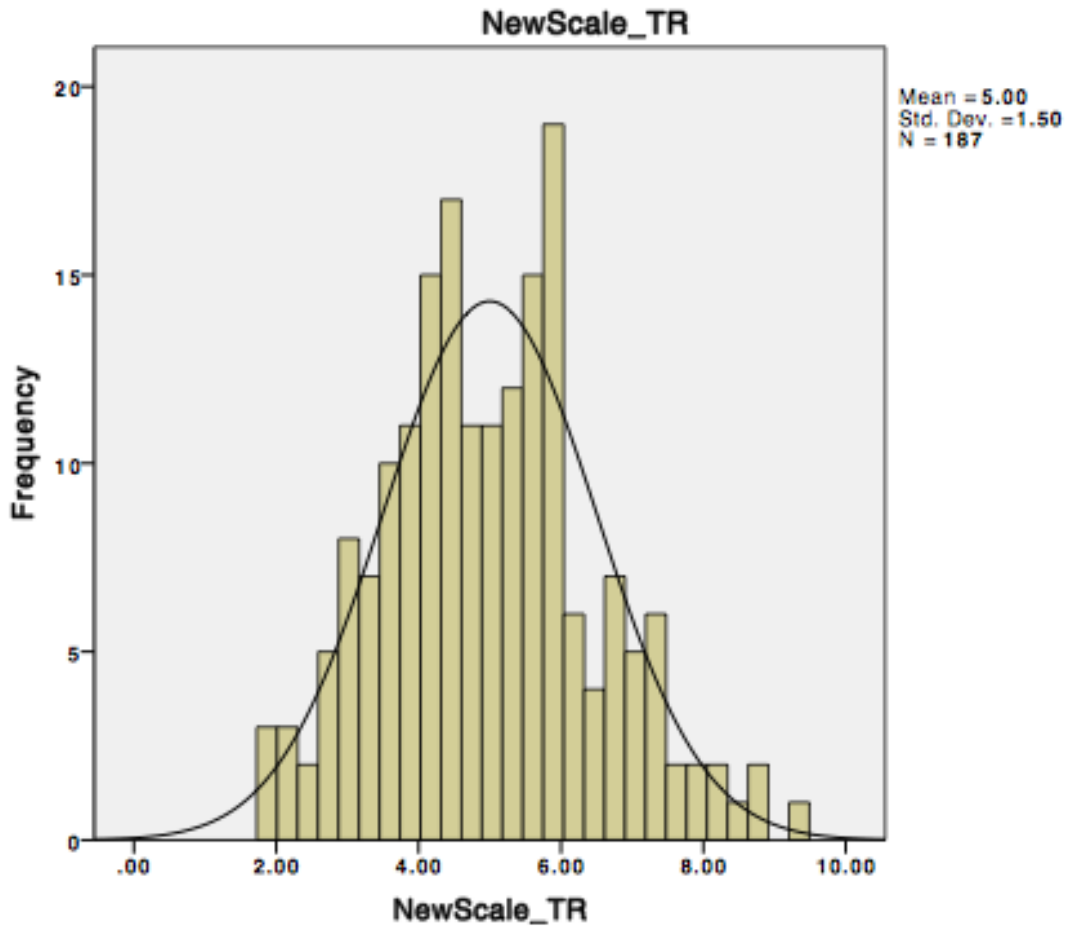












The charts show that with the exception of the II distribution the distributions, while not perfectly normal, are symmetric and approximately normal in shape and form. It is possible that with a larger sample the distribution would become even more normal in shape. The current results show that the GSP provides adequate discrimination between respondents and that it discriminates in the desirable and intended form of a Normal Curve.

## VI. Summary

The results of the analyses provide support for the psychometric properties of the GSP in the areas of Reliability, Scale Composition, and Construct Validity. All scales have appropriate levels of reliability as measured by Cronbach's alpha reliability estimate. There is factor analytic support for five dimensions of the GSP Model being measured by the GSP scale items. The Exploratory Factor Analysis offered empirical support that the model provided a reasonable fit to the data, thus providing support for GSP Construct Validity. In fact, the Varimax Rotation results were so clear and supportive of the hypothesized model it was not necessary to perform a Confirmatory Factor Analysis. The results also show that the five dimensions are not highly inter-correlated so that they can be interpreted independently of each other, making feedback simpler and more dependable. Finally, the independence of the dimensions shows that the GSP is measuring a broad behavioral domain consistent with an area as large as intercultural behavior and values.

Based on the above, it can be said with confidence that the GSP has sound psychometric properties for use by individuals examining their preferred interaction styles and wanting to know how they compare with others on the selected dimensions of culture.

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## About Aperian Global

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