## INTRODUCTION

This document is provided to supply potential clients with a basic understanding of the technical/statistical construction of the Culture Index™ Survey. It is also written to serve as a primer for those who need to have a basic understanding of the requirements for determining acceptable standards when evaluating any psychometric instrument.

Italicized words reflect language used in the Equal Employment Opportunity Commission (EEOC) Guidelines as well as common statistical terms pertaining to psychological measurement. We have attempted to clearly define them in this report.

## INVENTORIES AND TESTS

While the EEOC does not make a legal distinction between tests and personality inventories, there is a practical distinction between the two. Tests usually produce pass or fail scores of a cognitive nature, meaning measure of learned skills such as mathematics and vocabulary. These types of scores can be easily compared. For example, if two people take a vocabulary test and one scores 75% and the other 85%, then the latter person clearly received the higher score.

Personality and behavior inventories, on the other hand, rarely produce pass or fail scores, but report non-cognitive traits, aptitudes, interest, and other qualities which are not "book learned". As a result, personality inventories are more difficult to use, particularly when comparing individuals against each other or against job demands, and require specialized training and monitoring. For the sake of simplicity, however, the term "score" will be used in this report in reference to test or inventory results.

Today, there are common misperceptions and confusion regarding "testing" – some of it due to contradictions in federal law, some due to hearsay information, and some due to people's opinions. For instance, some people believe that testing is illegal. This is not true. The Supreme Court has ruled that testing "is not only legal, but valuable" when done appropriately (Griggs v. Duke Power Co., 1971). Appropriate usage means that a test is relevant to job demands and scores are linked to job performance. For example, why administer a typing test to someone who is applying for a sales position?

Under law, verbal interviews and other common selection practices come under EEOC scrutiny just as do personality assessments. In fact, the vast majority of discrimination suits lodged over the past 20 years have been the result of an interviewer's statement or question, as opposed to a test score.

Some employers fear that the results of testing will result in stereotyping and pigeonholing employees. This can result where there has been inadequate or inappropriate training and where test results have been extended beyond their proper contexts and applications. It is the responsibility of the trainer and consultant to have the qualifications and provide client support to prevent these occurrences.

Another major issue is adverse impact – whereby an instrument possesses an inherent bias against a minority (sex, race, religion, national origin). One of the most common areas of adverse impact is test result differences between men and women. If women consistently score differently than men in a specific test, then it has adverse impact and is discriminatory. This alone does not rule out the use of the test, but studies must be done comparing test scores against valid job performance measure, resulting in statistically significant measures that particular scores do, in fact accompany higher performance.

A tougher issue is adverse impact between various races/ethnicities. This is due to the difficulty of researchers gathering enough data across the job hierarchy. The Culture Index shows no evidence of bias against different races/ethnicities, but like other researchers, we do not yet possess a sufficient sampling to report conclusively.

Appropriately used, personality inventories produce a wealth of information to companies. Their results can be used for self-awareness, individual management and coaching, identifying and understanding necessary traits and behaviors for specific jobs, developing job descriptions, outlining organizational strengths and weaknesses, identifying training needs, and for selection and placement. They are one more tool for management to consider when The Culture Index™ Survey underwent five years of research and was introduced to the market in the autumn of 2004. Consequentially, it exhibits current norms of measured traits and behaviors in the contemporary North American work population. The norms figures are exhibited in Appendix A. analyzing and developing solutions.

## THE CULTURE INDEX™ SURVEY

There were four separate administrations of the survey from 1999 to 2004. The sample size of each administration was 180, 312, 428, and 493 cases respectively. Each administration reflected job hierarchy samples (e.g. executive, sales, supervisor, and production) and were very near 50% between sexes.

There is no inherent bias or discrimination (adverse impact) between women and men in the survey. The number of racial minorities included in the analyses was comparatively small due to the difficulty of gathering appropriate data. However, research to date has not found evidence of inherent discrimination in the instrument along racial lines. Literacy, obviously, was necessary for understanding and completion of the survey. This survey is not appropriate for individuals who are illiterate.

It takes approximately ten minutes to administer and complete the survey.

The survey is a self-report inventory which measures seven personality traits and seven behaviors which most researchers and users consider important to work-related activities. The seven constructs are Autonomy, Social Ability, Pace, Conformity, Energy Units, Logic and Ingenuity. Self-report means that an individual completes the survey based upon his or her own perceptions and beliefs of his personality and required job behaviors.

The Culture Index has also been used as an other-report inventory whereby individuals check words which they believe describe another. This has been found to be very valuable in teambuilding exercises.

The survey format consists of 174 words in each of two sections. Section One asks the respondent to check those words which describe him or herself. Section Two asks the respondent to check those words which describe how you must behave to be successful in your current position. It is a free-choice technique, meaning an individual can choose to check a word or not, and does not have to pick one word from a series or group (forced-choice).

Some of the words are experimental – they are not calculated, but are for future research.

Words checked are processed and converted to standardized (or Z) scores which are in turn converted into centile scores.

## TECHNICAL STANDARDS

Acceptable personality inventories must exhibit statistical evidence of their validity and reliability.

VALIDITY means that the instrument measures what it purports to measure. For instance, the Culture Index measures the trait or construct called autonomy (or assertiveness) and there are 21 words in each section which reflect the construct. In order to prove all 21 words do, in fact, measure autonomy a construct validity study was conducted using a statistical technique called factor analysis.

An item analysis was performed in which each item correlation with total score was examined; only those items with statistically significant correlation with total score were retained. Users of personality inventories should be extremely wary of a test publisher who cannot or will not exhibit construct validity analyses results. Any claims that the information is proprietary or the only evidence of validity is a comparison of the test's results against job performance measurements (job or criterion-related validity) should be considered highly suspect.

There are various reliability tests (e.g. test-retest, alternate form, split-half). The Culture Index™ Survey used the split-half reliability technique (specifically, Cronbach's Alpha).

Again, reputable test publishers will document their reliability correlation coefficients, and the figures should be at least .750 or better.

# FAKING

All inventories can be susceptible to faking (avoidance) – checking words that the respondent believes the employer would like to see checked. It would be absurd to state that any inventory (or resume, for that matter) could not be faked. However, research has shown that few people attempt to fake, particularly when they are told that fakes responses can be detected. It has also been shown that deceptive responses often manifest themselves in work performance.

The trick is how to minimize faking or detecting it when it does occur:

Let the respondent know that faked responses can be detected.

Make certain that a rapport and trust is established between the survey administrator and the respondent. The respondent should be told that feedback will be provided, what the inventory's purpose is and what it is not. However, the administrator must be careful not to explain the inventory's measurements since this could bias the responses.

The administrator should never coach the respondent. Providing hints or statements as to the type of personality the employer is looking for will almost certainly lead to biased responses.

An inventory should not be administered when there is a volatile climate in the organization, i.e., impending lay-offs or where there is antagonism between the administrator and the respondent.

In rare circumstances invalid responses may occur if the respondent lacks insight into his or her own characteristics, is self-deceptive, is extremely fearful of criticism, or has an inordinate desire for attention or sympathy.

The Culture Index™ Survey was not designed to be a diagnostic of personality disorders or to be used in a clinical setting. If an employer suspects that an employee or candidate may be unduly anxious or disturbed we recommend that the employer use the services of a license psychologist, social worker, or psychiatrist.

A faked response alone by a job applicant should never be considered a reason for not pursuing the applicant's qualifications. An inventory or test is only one criterion or component in the selection process.

Lastly, one should be skeptical when interpreting any personality self-report inventory of adolescents or people of very low intelligence. These individuals frequently have distorted self-concepts. We do not recommend that the Culture Index™ Survey be used in these circumstances.

# PREDICTING JOB SUCCESS

The Culture Index™ Survey should never be used alone to predict job success, either for a new hire or promotion or placement of a tenured employee.

In selection, promotion, and reorganization decisions other critical variables have to be used and properly considered – interviews, past experiences, job knowledge, skills, intellect, education, job stability, and performance appraisals, etc. The survey should always be integrated and reported within a complete job-related context. It is not designed to ensure job success, but to improve the predictability of job success.

Most importantly, a thorough job analysis should be conducted. A proper analysis can define and weigh the variables important to present and future successful performance. The C-Job Analysis Questionnaire™ supplies information pertaining to the behavioral job demands and our consultancy support is available to assist clients in defining and measuring the other components. Culture Index LLC. conducts job validity studies for their clients, often with no additional charge. We are also available and experiences in helping the client develop job performance measurements in order to conduct such studies. This information usually leads to the development of performance appraisal programs for ongoing use by the client.

# USAGE

The interpretation and evaluation of Culture Index™ Surveys (and other inventories) must be limited to those who have received formal training in its measurements, applications, and limitations. Even after training, expert consultancy support should always be available. Also, passing along a workshop or interpretive manual to another person for a "quick read" is no substitute for the in-depth instruction, discussions and exercises of the workshop.

Employees or applicants should never be coerced into taking any questionnaire; it should always be voluntary. Coercion frequently leads to faked responses.

The Culture Index™ Survey should always be administered in the individual's primary language.

Access to any test or inventory results should always be limited to those who need to know and should always be accompanied by an individual who has formal training in the instrument. Confidentiality of these records is mandatory.

Employees should always be provided feedback of their test or inventory results. It is mandatory that it be provided by someone who has been formally trained and available to answer any questions. Feedback to applicants is not required, but may be useful in certain circumstances.

Personality survey results older than five years (or less, depending on the instrument) should be interpreted cautiously. Re-administration is advised if the information is necessary and the respondent has not learned the measures.

## CONCLUSION

The use of inventories and tests must always be within the contexts for which they were designed. This may seem an obvious statement, but there has long been an enigmatic aura around testing, particularly personality and vocational.

In purchasing tests companies are subject to caveat emptor. There are no federal or state laws preventing the sale of poorly constructed or outright bogus tests. Visibility or longevity in the marketplace is no assurance of a test's validity – we long ago lost our amazement at certain tests' tenacity in the marketplace.

It is the buyer's responsibility to determine test quality and its suitability in his or her company. Test publishers who are secretive about their research should be scrutinized closely. Also, "oldie, but goodie" does not apply to tests unless they have been periodically checked, updated, and supported by documentation.

Reputable firms publish their research or allow it to be reviewed. They will point out their products' limitations as well as applications and advantages, and, finally, they will make certain that the products are properly explained to company personnel and positioned within the company.

If you have any questions regarding the Culture Index™ Survey, the C-Job Questionnaire™ or testing in general, do not hesitate to contact us.

## Appendix A
## NORMS FOR THE CULTURE INDEX™ PROGRAM SURVEY
## (Number) = 493 (316 Male, 176 Female)
## TRAITS – SECTION ONE

| | | | | | | |
|---|---|---|---|---|---|---|
| A (autonomy) | N | = | 21 | Standard Deviation | = | 5.04 |
| | Mean | = | 10.56 | | | |
| B (social ability) | N | = | 23 | Standard Deviation | = | 5.48 |
| | Mean | = | 11.60 | | | |
| C (pace)N | = | 19 | | Standard Deviation | = | 4.21 |
| | Mean | = | 7.59 | | | |
| D (conformity) | N | = | 34 | Standard Deviation | = | 6.61 |
| | Mean | = | 13.20 | | | |
| EU (energy units) | N | = | 97 | Standard Deviation | = | 16.47 |
| | Mean | = | 42.76 | | | |
| L (logic) N | = | 33 | | Standard Deviation | = | 4.75 |
| | Mean | = | 4.03 | | | |
| I (ingenuity) | N | = | 23 | Standard Deviation | = | 5.70 |
| | Mean | = | 12.22 | | | |

## IDEAL NORMS – SECTION TWO

| | | | | | | |
|---|---|---|---|---|---|---|
| A (autonomy) | N | = | 21 | Standard Deviation | = | 5.17 |
| | Mean | = | 9.69 | | | |
| B (social ability) | N | = | 23 | Standard Deviation | = | 5.05 |
| | Mean | = | 8.95 | | | |
| C (pace)N | = | 19 | | Standard Deviation | = | 4.04 |
| | Mean | = | 6.27 | | | |
| D (conformity) | N | = | 34 | Standard Deviation | = | 6.74 |
| | Mean | = | 13.46 | | | |
| EU (energy units) | N | = | 97 | Standard Deviation | = | 17.63 |
| | Mean | = | 37.97 | | | |
| L (logic) N | = | 33 | | Standard Deviation | = | 2.22 |
| | Mean | = | 1.72 | | | |
| I (ingenuity) | N | = | 23 | Standard Deviation | = | 5.79 |
| | Mean | = | 11.56 | | | |

## Appendix C
## Culture Index ™ Program
## Correlations

| | | A | B | C | D | I | L | EU |
|---|---|---|---|---|---|---|---|---|
| **A** | Pearson Correlation | 1 | | | | | | |
| | N | 493 | | | | | | |
| **B** | Pearson Correlation | .594** | 1 | | | | | |
| | N | 493 | 493 | | | | | |
| **C** | Pearson Correlation | .284** | .427** | 1 | | | | |
| | N | 493 | 493 | 493 | | | | |
| **D** | Pearson Correlation | .534** | .404** | .525** | 1 | | | |
| | N | 493 | 493 | 493 | 493 | | | |
| **I** | Pearson Correlation | .733* | .588** | .339** | .477** | 1 | | |
| | N | 493 | 493 | 493 | 493 | 493 | 493 | |
| **L** | Pearson Correlation | .003 | .114* | .031 | .109* | -.099* | 1 | |
| | N | 493 | 493 | 493 | 493 | 493 | 493 | |
| **EU** | Pearson Correlation | .787** | .781** | .684** | .827** | .696** | .090* | 1 |
| | N | 493 | 493 | 493 | 493 | 493 | 493 | 493 |

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

## Evaluation of Test-Retest Reliability:

## Culture Index

To determine if the Culture Index has temporal stability, 112 applicants for positions at a variety of companies located across the continental United States completed the Culture Index on two occasions. The first time they completed the personality inventory, they did so as one aspect of the job application process. They were asked to complete the measure a second time for research purposes. A majority of applicants completed the Culture Index the second time on the same day as the first administration. For other applicants the time interval between tests ranged from one to sixteen days.

## Statistical Results and Findings

The means and standard deviations were calculated for each scale for both testings. These results can be seen below.

| Scale | A | B | C | D | L | I | EU |
|---|---|---|---|---|---|---|---|
| Mean: First Administration | 8.67 | 12.13 | 7.17 | 13.26 | 3.08 | 8.88 | 41.23 |
| Standard Deviation | 4.80 | 5.65 | 4.40 | 7.03 | 3.16 | 5.97 | 17.86 |
| Mean: Second Administration | 9.04 | 12.39 | 7.56 | 13.47 | 3.04 | 9.59 | 42.47 |
| Standard Deviation | 4.95 | 5.74 | 4.52 | 7.52 | 3.01 | 6.23 | 18.83 |

As can be seen from these results, the scores on all the scales were highly similar on both testing occasions. In no case did the mean difference approach statistical significance.

To determine the test-retest reliability of the scales on the Culture Index, Pearson product-moment correlation coefficients were calculated for each scale for the two test administrations. The results of this statistical analysis can be seen below.

| Scale | A | B | C | D | L | I | EU |
|---|---|---|---|---|---|---|---|
| Reliability Coefficient | 0.95 | 0.95 | 0.94 | 0.96 | 0.86 | 0.94 | 0.96 |

These correlation coefficients are all of substantial magnitude indicating considerable stability of test results over time. The only correlation to fall below .90 was on the Logic (L) scale and this statistic, at 0.86, was only somewhat smaller. An examination of the distribution of scores on the Logic scale reveals that it is highly skewed. While there are 33 items on this scale, the mean score was only slightly above three. This means that there was relatively little variability in scores on this scale (as reflected in the standard deviations) so it is not surprising that the correlation coefficient would be smaller than on the other scales whose distributions more closely approximated normal curves.

## Conclusions

The results of this study indicate a high degree of temporal stability. One issue that would be useful to address in subsequent research would be the time interval between test administrations. It would be ideal to have all test respondents have an interval of between seven and fourteen days. As stated previously, a majority of the test respondents in this study completed the second testing on the same day as the first. Although caution must be exercised in interpreting these results, it does provide good reason to believe that there is relatively little error variance that results from time sampling.

These results regarding test-retest reliability, taken together with data previously collected regarding internal consistency, are quite encouraging. As previously reported the coefficient alphas for the Culture Index were as follows:

| Scale | A | B | C | D | L | I | EU |
|---|---|---|---|---|---|---|---|
| Coefficient Alpha | 0.87 | 0.87 | 0.82 | 0.87 | 0.89 | 0.89 | 0.94 |

These two sets of data provide good evidence of the reliability of the Culture Index. It is also important to note that there is no information available that is not consistent with the above reports. While it is always useful to collect additional information, it would appear that the reliability of the Culture Index has been established.