



Validation Analysis of the Intercultural Development Inventory (IDI)

June 5, 2017

Submitted By:
Andrew Wiley
917.885.0858

Awiley@acsventures.com

Contents

| | |
|---------------------------------------------------------------------------|----|
| Preface: Executive Summary (Mitchell R. Hammer, Ph.D., IDI, LLC) | 3 |
| Overview | 5 |
| Data screening | 3 |
| Initial Review of item and test score performance..... | 4 |
| Test Score performance by key variables | 5 |
| Differential Item Functioning..... | 6 |
| Reliability analyses | 11 |
| Confirmatory Factor Analysis..... | 16 |
| References | 18 |
| Appendix A: Correlation results for Total score and subscores | |
| Appendix B: Correlation of IDI items to Total score | |
| Appendix C: IDI item correlations to subscores – Education data..... | |
| Appendix D: IDI item correlations to subscores - Organizational data..... | |
| Appendix E: Confirmatory Factor Analysis results for Education | |
| Appendix F: Confirmatory Factor Analysis results for Organizational | |



Overview

This report is designed to provide an overview of all of the analyses that have been completed by ACS Ventures, LLC (ACS) for the IDI Inventory. IDI LLC (IDI) contracted with ACS to complete a series of independent psychometric analyses to further investigate of the performance of items and scores from the IDI Inventory.

ACS is a psychometric consulting company formed in 2016. ACS Ventures, LLC (ACS) was formed to address a need in the assessment community for design, operational support, and quality assurance. These needs are inclusive of assessment policy and practice in the education, credentialing, and workforce sectors. The ACS team is committed to applying its diverse experience in our work with organizations that is focused on the development of practical solutions that help ensure the reliability, validity, and fairness of our clients' assessment programs.

ACS staff members have over 40 years of collective experience working with organizations in the education, workplace, and credentialing sectors. Their experience has included a review of comprehensive high-stakes statewide assessment programs, the independent evaluation of the validity and fairness of online assessment programs, and work setting standards in a wide variety of professional credentialing environments.

The work is being completed as part of the continuous maintenance of the IDI Inventory and as an independent evaluation of both items and scores. The IDI Inventory has already been the subject of multiple other investigations and has an extensive history of research (Hammer, 2011). This project was designed to focus on some of the traditional psychometric analyses performed on programs in the education and credentialing space in order to provide additional perspectives on the performance of the items and overall test scores.

Data screening

In order to complete all of the analysis, IDI provided ACS with data from respondents who had completed the IDI Inventory over the past three years and gave their permission for the data to be used anonymously for further IDI validation studies. The data was separated into two distinct samples, respondents who took the IDI Inventory from educational settings, and respondents who took the IDI Inventory from organizational level settings. The initial organizational level file had approximately 70,000 records included, while the initial educational file has approximately 288,000 records included. Upon receipt of the files, ACS completed a number of data screening steps in order to create a sample that would be most appropriate for the completion of the psychometric analyses. The data cleaning included:

- The removal of any records for respondents who did not have total score or any of the IDI subscores
- The removal of any records that were missing any item responses to the items on the IDI Inventory
- The removal of any records that had appeared to have the data entered incorrectly, or not formatted appropriately.
- The removal of any duplicate records for respondents that appeared to have multiple records of the same testing experience.
- The removal of any "post" IDI testing instances.

The removal of any post records was completed in order to identify any respondents who took the IDI Inventory on more than one occasion. In some instances, the IDI Inventory may be used as a pre and post



measure prior to an educational program designed to increase cultural awareness. In order to complete our analyses on a sample with only first-time respondents, all of the “post” records were removed and only the first instance for any candidate was included in our sample. These data cleaning rules resulted in samples of 67,534 respondents in the organizational level file and 150,577 in the educational file.

Initial Review of item and test score performance

Once the data had been cleaned, the initial analysis completed by ACS was focused on exploring the test scales for the IDI Inventory, as well as the performance of the items within each of the scales. This analysis was completed to allow for an initial review of test score and item performance, and how each were inter-correlated with one another. Because the correlation matrices are rather large it would not be feasible to include all tables provided within the this Word file; instead, a sample of the information provided is included here, and further tables are referred to in the files *EDU correlation.xlsx* and *ORG correlations.xlsx*. The analyses included:

- Mean and standard deviation for the IDI total scores (i.e., Perceived Orientation (PO) and Developmental Orientation (DO) and each subscore
- The correlation between the IDI total scores and each subscore
- The correlation of each item to the IDI total score and each subscore
- A review of the item to subscale correlation values within each subscale to determine if any items appeared to demonstrate a different relationship than the others

The values for the correlation of the IDI total scores (PO, DO) to each of the subscales (Denial, Polarization, Minimization, Acceptance and Adaptation) is provided in Tables A1 and A2 located in Appendix A. As can be observed, almost all of the subscales exhibited moderate correlations with the total score. Adaptation exhibited slightly lower correlations than the others.

The relationship between the items and the total scores and subscores were also observed and overall, the items on the IDI Inventory performed as would be expected. The correlation of all items to the total scores can be found in Appendix B. In addition, Appendices C (Education) and D (Organizational) present the correlation of all items to the primary IDI subscales. Items generally had moderate to strong correlations with the IDI total score and with the subscales that they were assigned to. Just as importantly, the items did not demonstrate strong correlations with subscales that they were *not* assigned. Items also demonstrated moderate to strong correlations between the items within the same subscale.

Based upon these analyses, three items were tagged for further review. The three items (#1, #4, and #8) demonstrated slightly lower correlations to their respective subscales than the other items. It is important to note that while these items were tagged, these items were not demonstrating *poor* measurement properties, just that they showed some indications that they may not be quite as effective as the other items.



Test Score Performance by key variables

The second set of analyses performed were focused on comparing the performance of respondents across a number of key variables. The analyses included comparisons of both test total scores and items on the variables:

- Gender
- Ethnic minority status
- Age
- Education level
- Position within the organization (Organization version only)
- Country

The review of test total scores and items was designed to provide a snapshot of test and item performance. The complete set of analyses are included in the files *EDU IDI Scores and item by Key Variables.xlsx* and *ORG IDI Scores and item by Key Variables.xlsx*. It is noteworthy that for many of the variables that were investigated, the differences in scores were fairly small. For example, if you look at tables 1 and 2 below, the mean total scores by gender and by ethnic minority status are reported, for both the education and organizational data. In both scenarios, the difference in total scores is rather small and do not appear to be consequential.

Table 1: Mean total score on the IDI Inventory by gender

| Gender | EDUCATION | | | | ORGANIZATION | | | |
|----------------|-----------|--------|--------|--------|--------------|--------|--------|--------|
| | Male | | Female | | Male | | Female | |
| | PO | DO | PO | DO | PO | DO | PO | DO |
| N | 41,873 | 41,873 | 83,449 | 83,449 | 28,712 | 28,712 | 26,498 | 26,498 |
| Mean | 120.66 | 90.94 | 122.02 | 95.08 | 122.93 | 97.65 | 124.28 | 101.53 |
| Std. Deviation | 6.85 | 17.33 | 6.65 | 16.68 | 6.51 | 16.33 | 6.49 | 15.78 |

Table 2: Mean total score on the IDI Inventory by ethnic minority status

| Ethnic Minority | EDUCATION | | | | ORGANIZATION | | | |
|-----------------|-----------|--------|--------|--------|--------------|--------|--------|--------|
| | No | | Yes | | No | | Yes | |
| | PO | DO | PO | DO | PO | DO | PO | DO |
| N | 19,911 | 19,911 | 81,425 | 81,425 | 42,265 | 42,265 | 9,268 | 9,268 |
| Mean | 122.46 | 95.11 | 121.51 | 93.73 | 123.25 | 98.90 | 124.91 | 101.96 |
| Std. Deviation | 6.99 | 17.63 | 6.67 | 16.89 | 6.48 | 16.09 | 6.65 | 16.48 |



Differential Item Functioning

The next set of analyses focused on an investigation of Differential Item Functioning (DIF). Results for these analyses were shared in the files *EDU Reliability and DIF Estimates 1May2017.xlsx* and *ORG Reliability and DIF Estimates 1May2017.xlsx*. In a DIF analysis, the performance of respondents on each item are reviewed to evaluate if the item appears to unfairly favor one group over another. As such, DIF analysis is one methodology for the assessment of bias in the items on the instrument.

It is important to note that for DIF, the mere presence of a difference in performance is not sufficient. DIF controls for the total score of the respondents, and within comparable respondents, performance on each item is evaluated. In the event that DIF is detected in one or more item, the item should be evaluated closer from both a statistical and content perspective to ensure that the item is appropriate and does not appear to advantage one group of respondents over another.

There are a number of different methodologies for conducting a DIF analysis. One of the most frequently used is the Mantel-Haenszel classification model (Dorans & Holland, 1993). The Mantel-Haenszel evaluates each item, and based upon the results, the items can be classified into one of three DIF categories, A, B, or C (Zieky, 2003). In this scenario, the classification of A indicates that little to no DIF is observed for that given comparison, a value of B indicates a moderate amount, and C represents a significant amount of DIF. In many educational testing programs, items classified at either the B or C level will be reviewed by content and fairness experts to evaluate whether any features of the items may be unfairly disadvantaging any of the groups. Given the focus and content of the IDI, it would appear to be most appropriate to review any items that are classified at the C level to ensure that no content issues with the item exist and need to be addressed.

For the education data, DIF analyses were completed comparing the performance across male and female students, between respondents classified as an ethnic minority in their country as those who are not, and based upon education level. For education level, students who were on track to receive a college degree were compared with those respondents who indicated they received a post-graduate degree. Table 3 below provides the classifications for each item on all three DIF analyses.

Table 3: DIF Analysis results for Educational respondents

| | EDUCATION | | |
|----|-----------------|-----------------|-----------------------|
| | Gender | Ethnic Minority | Education |
| | Male vs. Female | No vs. Yes | College vs. post-grad |
| 1 | A | A | A |
| 2 | A | A | A |
| 3 | A | B+ | A |
| 4 | B- | A | A |
| 5 | A | B+ | A |
| 6 | A | A | A |
| 7 | A | A | B+ |
| 8 | A | A | A |
| 9 | A | A | A |
| 10 | A | A | A |
| 11 | A | A | A |



| | | | |
|----|---|----|----|
| 12 | A | A | A |
| 13 | A | A | B- |
| 14 | A | A | A |
| 15 | A | A | B- |
| 16 | A | A | A |
| 17 | A | A | A |
| 18 | A | A | B- |
| 19 | A | A | A |
| 20 | A | A | A |
| 21 | A | A | A |
| 22 | A | A | A |
| 23 | A | B+ | A |
| 24 | A | A | A |
| 25 | A | A | B- |
| 26 | A | A | B- |
| 27 | A | A | A |
| 28 | A | A | A |
| 29 | A | A | A |
| 30 | A | A | A |
| 31 | A | A | A |
| 32 | A | B+ | A |
| 33 | A | A | A |
| 34 | A | A | A |
| 35 | A | A | B- |
| 36 | A | A | A |
| 37 | A | A | A |
| 38 | A | A | A |
| 39 | A | A | A |
| 40 | A | A | A |
| 41 | A | A | A |
| 42 | A | A | A |
| 43 | A | A | A |
| 44 | A | A | A |
| 45 | A | A | A |
| 46 | A | A | A |
| 47 | A | A | A |
| 48 | A | A | A |
| 49 | A | A | A |
| 50 | A | A | A |

First category listed in row 4 is the reference group; 2nd listed is the focal group
(i.e. males = reference, females = focal)

A No meaningful DIF observed



- B Moderate amounts of DIF observed
- C Significant amount of DIF observed
- + DIF favors the focal group
- DIF favors the reference group

It is noteworthy that across all of the analyses completed, none of the items were flagged at the C level of DIF. Overall, these findings have not identified any items with notably DIF by gender, ethnic majority/minority status or education level within the Education respondents.



At the organizational level, the same variables were investigated for DIF. In addition, a DIF comparison was completed based upon the position of the test respondents within their organization. For this comparison, respondents with upper management position were compared to respondents in middle management positions, and then also compared to respondents in non-management positions.

Table 4: DIF Analysis results for organizational level respondents

| ORGANIZATION | | | | | |
|--------------|-----------------|-----------------|-----------------------|---------------------------|------------------------|
| | Gender | Ethnic Minority | Education | Position | |
| | Male vs. Female | No vs. Yes | College vs. post-grad | Upper Mgmt vs Middle Mgmt | Upper Mgmt vs Non Mgmt |
| 1 | A | A | A | A | A |
| 2 | A | A | A | A | A |
| 3 | A | B+ | A | A | A |
| 4 | B- | A | A | A | A |
| 5 | A | B+ | A | A | A |
| 6 | A | A | A | A | A |
| 7 | A | A | A | A | A |
| 8 | A | A | A | A | A |
| 9 | A | B+ | A | A | A |
| 10 | A | A | A | A | A |
| 11 | A | A | A | A | A |
| 12 | A | A | A | A | A |
| 13 | A | A | A | A | A |
| 14 | A | A | A | A | A |
| 15 | A | A | A | A | A |
| 16 | A | A | A | A | A |
| 17 | A | A | A | A | A |
| 18 | A | A | A | A | A |
| 19 | A | A | A | A | A |
| 20 | A | A | A | A | A |
| 21 | A | A | A | A | A |
| 22 | A | A | A | A | A |
| 23 | A | A | A | A | A |
| 24 | A | A | A | A | A |
| 25 | A | B- | A | A | A |
| 26 | A | A | A | A | A |
| 27 | A | A | A | A | A |
| 28 | A | A | A | A | A |
| 29 | A | A | A | A | A |
| 30 | A | A | A | A | A |
| 31 | A | A | A | A | A |
| 32 | A | B+ | A | A | A |



| | | | | | |
|----|---|---|---|---|---|
| 33 | A | A | A | A | A |
| 34 | A | A | A | A | A |
| 35 | A | A | A | A | A |
| 36 | A | A | A | A | A |
| 37 | A | A | A | A | A |
| 38 | A | A | A | A | A |
| 39 | A | A | A | A | A |
| 40 | A | A | A | A | A |
| 41 | A | A | A | A | A |
| 42 | A | A | A | A | A |
| 43 | A | A | A | A | A |
| 44 | A | A | A | A | A |
| 45 | A | A | A | A | A |
| 46 | A | A | A | A | A |
| 47 | A | A | A | A | A |
| 48 | A | A | A | A | A |
| 49 | A | A | A | A | A |
| 50 | A | A | A | A | A |

First category listed in row 4 is the reference group; 2nd listed is the focal group
(i.e. males = reference, females = focal)

- A No meaningful DIF observed
- B Moderate amounts of DIF observed
- C Significant amount of DIF observed
- + DIF favors the focal group
- DIF favors the reference group

It is noteworthy that across all of the analyses completed, none of the items were flagged at the C level of DIF. Overall, these findings have not identified any items with notably DIF by gender, ethnic majority/minority status, education level or management/non-management position within the Organizational respondents.



Reliability Analyses

The next set of analyses was focused on the internal reliability of the IDI total score and each of the IDI subscales. The internal reliability can provide some important information when considering the reliability of the IDI Inventory.

With the internal reliability analyses, it can provide valuable information on specific items as well as the individual scales. When the reliability analyses were completed, each item was also reviewed to determine how the reliability indices would change if that item was removed from the scale. In this analysis, it would be expected that the removal of any one item should not dramatically alter the reliability estimate. However, it would be expected to see a small reduction in the estimated reliability. Because of that, if the reliability estimate for a given scale does *not* decrease a notable degree, that is an indication that the item may not be contributing that much to the overall reliability.

Results from the reliability analyses indicate that most of the scales in the Educational data had good reliability values, with the overall test score exhibiting strong internal reliability estimates (0.84). Within the subscales, the values for Polarization (0.85), Minimization (0.79), Acceptance (0.75) and Adaption (0.81) having strong reliability estimates as well. The Denial subscale was slightly lower (0.72), but was still within an acceptable range for these types of scores.

Results from the reliability analyses indicate that most of the scales in the Organizational data had good reliability values, with the overall test score exhibiting strong internal reliability estimates (0.84). Within the subscales, the values for Polarization (0.86), Minimization (0.81), Acceptance (0.79) and Adaption (0.79) having strong reliability estimates as well. The Denial subscale was slightly lower (0.70), but was still within an acceptable range for these types of scores.

Analysis of individual item contribution to overall scale reliabilities indicate that most of the IDI Items strongly contributed to scale reliabilities, with three items (#1, 4, and 8) having someone lower contribution to reliability estimates. Each of those items is highlighted in Table 5 and 6 below.



Table 5: Reliability estimate for the Education respondents

| | TOTAL | Den | POL | Min | Acc | Ada |
|--------------------|--------------------------------|---------------|---------------|---------------|---------------|---------------|
| Reliability | 0.8384 | 0.7187 | 0.8494 | 0.7915 | 0.7528 | 0.7664 |
| Item # | Reliability if item is removed | | | | | |
| 1 | 0.8384 | 0.7316 | | | | |
| 2 | 0.8363 | | | | | |
| 3 | 0.8391 | | | | 0.7175 | |
| 4 | 0.8379 | | | | | 0.7773 |
| 5 | 0.8387 | | | | 0.6907 | |
| 6 | 0.8329 | | 0.8417 | | | |
| 7 | 0.8374 | | | 0.7710 | | |
| 8 | 0.8346 | | | 0.7905 | | |
| 9 | 0.836 | | | | | 0.7544 |
| 10 | 0.8362 | | | | | |
| 11 | 0.8353 | | | | | 0.7292 |
| 12 | 0.8377 | | | | | 0.7350 |
| 13 | 0.835 | | | | | 0.7411 |
| 14 | 0.8374 | | | | | 0.7545 |
| 15 | 0.8338 | | 0.8477 | | | |
| 16 | 0.8366 | | | 0.7816 | | |
| 17 | 0.8348 | 0.6703 | | | | |
| 18 | 0.8333 | | 0.8391 | | | |
| 19 | 0.8362 | | | | | 0.7363 |
| 20 | 0.8355 | | | | | |
| 21 | 0.8383 | | | | 0.7146 | |
| 22 | 0.834 | | 0.8441 | | | |
| 23 | 0.8377 | | | | 0.7249 | |
| 24 | 0.8335 | | 0.8393 | | | |
| 25 | 0.8348 | | | | | |
| 26 | 0.8348 | | | | | |
| 27 | 0.8343 | 0.6798 | | | | |
| 28 | 0.8316 | | 0.8331 | | | |
| 29 | 0.8328 | | 0.8396 | | | |
| 30 | 0.8373 | | | 0.7707 | | |
| 31 | 0.8328 | | 0.8401 | | | |
| 32 | 0.837 | | | | | 0.7365 |
| 33 | 0.8334 | | 0.8393 | | | |
| 34 | 0.8325 | | 0.8373 | | | |
| 35 | 0.8338 | 0.6696 | | | | |



| | | | | | | |
|----|--------|--------|--------|--------|--------|--------|
| 36 | 0.8361 | | | 0.7589 | | |
| 37 | 0.8342 | | 0.8453 | | | |
| 38 | 0.836 | 0.6887 | | | | |
| 39 | 0.832 | | 0.8376 | | | |
| 40 | 0.8339 | | 0.8438 | | | |
| 41 | 0.8353 | | | 0.7578 | | |
| 42 | 0.8326 | | 0.8412 | | | |
| 43 | 0.8356 | 0.6841 | | | | |
| 44 | 0.8317 | | 0.8346 | | | |
| 45 | 0.8356 | | | 0.7660 | | |
| 46 | 0.8368 | | | 0.7733 | | |
| 47 | 0.8378 | | | | 0.6947 | |
| 48 | 0.8343 | 0.6756 | | | | |
| 49 | 0.834 | | | 0.7703 | | |
| 50 | 0.8356 | | | | | 0.7340 |



Table 6: Reliability estimate for the Organization respondents

| | Total | DEN | POL | MIN | ACC | ADA |
|--------------------|--------------------------------|---------------|---------------|---------------|---------------|---------------|
| Reliability | 0.8401 | 0.6941 | 0.8604 | 0.8064 | 0.7907 | 0.7900 |
| Item # | Reliability if item is removed | | | | | |
| 1 | 0.8410 | 0.7131 | | | | |
| 2 | 0.8392 | | | | | |
| 3 | 0.8401 | | | | 0.7580 | |
| 4 | 0.8392 | | | | | 0.7985 |
| 5 | 0.8394 | | | | 0.7323 | |
| 6 | 0.8354 | | 0.8554 | | | |
| 7 | 0.8398 | | | 0.7862 | | |
| 8 | 0.8374 | | | 0.8020 | | |
| 9 | 0.8376 | | | | | 0.7776 |
| 10 | 0.8393 | | | | | |
| 11 | 0.8368 | | | | | 0.7565 |
| 12 | 0.8388 | | | | | 0.7614 |
| 13 | 0.8363 | | | | | 0.7643 |
| 14 | 0.8392 | | | | | 0.7838 |
| 15 | 0.8361 | | 0.8601 | | | |
| 16 | 0.8386 | | | 0.7967 | | |
| 17 | 0.8371 | 0.6442 | | | | |
| 18 | 0.8365 | | 0.8528 | | | |
| 19 | 0.8379 | | | | | 0.7655 |
| 20 | 0.8385 | | | | | |
| 21 | 0.8395 | | | | 0.7642 | |
| 22 | 0.8365 | | 0.8558 | | | |
| 23 | 0.8387 | | | | 0.7636 | |
| 24 | 0.8361 | | 0.8518 | | | |
| 25 | 0.8387 | | | | | |
| 26 | 0.8387 | | | | | |
| 27 | 0.8370 | 0.6542 | | | | |
| 28 | 0.8340 | | 0.8458 | | | |
| 29 | 0.8347 | | 0.8494 | | | |
| 30 | 0.8389 | | | 0.7875 | | |
| 31 | 0.8354 | | 0.8523 | | | |
| 32 | 0.8372 | | | | | 0.7599 |
| 33 | 0.8355 | | 0.8504 | | | |
| 34 | 0.8349 | | 0.8491 | | | |
| 35 | 0.8364 | 0.6364 | | | | |



| | | | | | | |
|----|--------|--------|--------|--------|--------|--------|
| 36 | 0.8381 | | | 0.7757 | | |
| 37 | 0.8368 | | 0.8559 | | | |
| 38 | 0.8384 | 0.6645 | | | | |
| 39 | 0.8337 | | 0.8475 | | | |
| 40 | 0.8364 | | 0.8559 | | | |
| 41 | 0.8384 | | | 0.7773 | | |
| 42 | 0.8337 | | 0.8496 | | | |
| 43 | 0.8375 | 0.6567 | | | | |
| 44 | 0.8338 | | 0.8458 | | | |
| 45 | 0.8379 | | | 0.7823 | | |
| 46 | 0.8384 | | | 0.7888 | | |
| 47 | 0.8383 | | | | 0.7357 | |
| 48 | 0.8368 | 0.6472 | | | | |
| 49 | 0.8365 | | | 0.7875 | | |
| 50 | 0.8366 | | | | | 0.7577 |



Confirmatory Factor Analysis

The last set of analyses completed was a confirmatory factor analysis. The confirmatory factor analysis was based upon multiple pieces of research already completed with the IDI Inventory (Hammer, 2011). The analyses completed was based upon a five-factor solution (Denial, Polarization (Defense, Reversal), Minimization, Acceptance and Adaptation) and was run on both the education and organization level data.

The five-factor solution assigned to one of five factors as described in Table 7 below:

Table 7: Item assignment for the five-factor solution for the confirmatory factor analysis

| Factor | Items |
|---------------------|-----------------------------------------------------------|
| 1 (Denial) | 1, 17, 27, 35, 38, 43, 48 |
| 2 (Minimization) | 7, 8, 16, 30, 36, 41, 45, 46, 49 |
| 3 (Acceptance) | 3, 5, 21, 23, 47 |
| 4 (Adaptation) | 4, 9, 11, 12, 13, 14, 19, 32, 50 |
| 5 (Polarization) | 6, 15, 18, 22, 24, 28, 29, 31, 33, 34, 37, 39, 40, 42, 44 |

The factor analysis was completed using the SPSS AMOS software. After each analyses was completed, the factor loading for each of the items was reviewed, as well as the indicators for model data fit. To complete each analysis, the data set was first reduced to 50,000 respondents for both the Educational and Organizational data sets. The sample was reduced by randomly selecting 50,000 respondents from each larger data set to allow the computations to be completed in a timely fashion.

As often happens when running a confirmatory factor analysis, the results do not necessarily have an easy interpretation. The results are provided in Appendices E and F. With sample sizes this large, the statistical significance that is obtained when using a statistic such as the chi-square is no longer particularly meaningful. Because the sample sizes are so large, even miniscule difference will be flagged as statistically significant, and can lead to misinterpretation of the results.

With the education data set, (1) the GFI model data fit is slightly lower (0.846) than what is normally considered to be appropriate (0.90). The CFI indicator is also lower (0.763) than is normally considered to be an indicator of good fit (0.90). On the other hand, the RMSEA has a value of 0.055 which is normally considered to be an indicator of good fit.

Another noteworthy result from the analyses was that for the education data set, the factor loadings for three items (#1, 4, and 8) appear to be notably lower than the other items. The factor loading for #1 was 0.27 on factor #1, with the next lowest item factor loading within that factor is 0.49. Item #4 was within factor #4 and



had a factor loading of 0.31 with the next lowest factor loading on that factor being 0.45. Item #8 was within factor #2 and had a factor loading of 0.37, with the next closest factor loading being 0.45 for that factor.

To help determine the impact of these three items, an additional factor analysis was completed with these three items removed. The removal of these items *did not appear to have a notable impact on the overall model fit*. The GFI also shifted from a value of 0.846 to 0.848, while the CFI only shifted from 0.763 to 0.774. The RMSEA shifted from a value of 0.055 to 0.057. Because of that, it does not appear that these items have negatively impacted the overall fit. Overall, the Confirmatory Factor Analysis on the Education data set suggests the five-factor model is a reasonably good fit to the data.

The identical analyses were also completed with the organizational level data. With the organizational data set, the GFI model data fit is slightly lower (0.867) than what is normally considered to be appropriate (0.90). In addition, the CFI indicator is lower (0.800) than is normally considered to be indicative of good fit (0.90). On the other hand, the RMSEA has a value of 0.052 which is normally considered to be an indicator of good fit.

Consistent with the educational analysis, though not to as strong a degree, the factor loadings for three items (#1, 4, and 8) appear to be somewhat lower than the other items. The factor loading for #1 was 0.23 on factor #1, with the next lowest item factor loading within that factor is 0.44. Item #4 was within factor #4 and had a factor loading of 0.36 with the next lowest factor loading on that factor being 0.44. Item #8 was within factor #2 and had a factor loading of 0.42, with the next closest factor loading being 0.54 for that factor.

To further determine the impact of these three items, an additional confirmatory factor analysis was completed with these three items removed. The removal of these items *did not appear to have a notable impact on the overall model fit*. The GFI also shifted from a value of 0.867 to 0.869, while the CFI only shifted from 0.800 to 0.809. The RMSEA shifted from a value of 0.052 to 0.054. Because of that, it does not appear that these items have negatively impacted the overall fit. Overall, the Confirmatory Factor Analysis on the Organization data set suggests the five-factor model is a reasonably good fit to the data.



References

- Dorans, N. J., & Holland, P. W. (1993). DIF detection and description: Mantel-Haenszel and standardization. In P. W. Holland & H. Wainer (Eds.), *Differential item functioning* (pp. 35–66). Hillsdale, NJ: Erlbaum.
- Hammer, M.R. (2011). Additional cross-cultural validity testing of the Intercultural Development Inventory. *International Journal of Intercultural Relations*, 35, 474-487.
- Zieky, M. (2003). *A DIF Primer*. Research Report from Educational testing Service.



Appendix A: Correlation results for Total score and Subscores

Table A1: Education Total Score and Subscore correlations

| | PO | DO | Denial | POL | Min | ACC | ADA |
|--------------------------------|-------|-------|--------|--------|--------|-------|-----|
| Perceived Orientation (PO) | 1 | | | | | | |
| Developmental Orientation (DO) | 0.960 | 1 | | | | | |
| Denial (DEN) | 0.603 | 0.661 | 1 | | | | |
| Polarization (POL) | 0.767 | 0.891 | 0.541 | 1 | | | |
| Minimization (MIN) | 0.588 | 0.518 | 0.121 | 0.170 | 1 | | |
| Acceptance (ACC) | 0.400 | 0.211 | 0.132 | 0.047 | 0.063 | 1 | |
| Adaption (ADA) | 0.294 | 0.075 | 0.074 | -0.081 | -0.071 | 0.526 | 1 |

Table A2: Organization Total Score and Subscore correlations

| | PO | DO | DEN | POL | MIN | ACC | ADA |
|--------------------------------|-------|-------|-------|--------|--------|-------|-----|
| Perceived Orientation (PO) | 1 | | | | | | |
| Developmental Orientation (DO) | 0.952 | 1 | | | | | |
| Denial (DEN) | 0.57 | 0.638 | 1 | | | | |
| Polarization (POL) | 0.714 | 0.868 | 0.512 | 1 | | | |
| Minimization (MIN) | 0.613 | 0.534 | 0.139 | 0.135 | 1 | | |
| Acceptance (ACC) | 0.408 | 0.188 | 0.093 | -0.022 | 0.108 | 1 | |
| Adaption (ADA) | 0.315 | 0.074 | 0.048 | -0.102 | -0.054 | 0.554 | 1 |

Appendix B: Correlation of IDI Items to Total scores

Table B1: Education Data, Correlations of items to Total Scores

| Correlations | | | | Correlations | | |
|--------------|--------|--------|--|--------------|--------|--------|
| | PO | DO | | | PO | DO |
| i1 | -0.214 | -0.232 | | i26 | -0.243 | -0.259 |
| i2 | -0.131 | -0.158 | | i27 | -0.448 | -0.471 |
| i3 | 0.266 | 0.136 | | i28 | -0.497 | -0.588 |
| i4 | 0.121 | -0.002 | | i29 | -0.410 | -0.497 |
| i5 | 0.288 | 0.149 | | i30 | -0.256 | -0.207 |
| i6 | -0.390 | -0.474 | | i31 | -0.442 | -0.512 |
| i7 | -0.355 | -0.298 | | i32 | 0.261 | 0.120 |
| i8 | -0.371 | -0.362 | | i33 | -0.409 | -0.490 |
| i9 | 0.073 | -0.025 | | i34 | -0.486 | -0.556 |
| i10 | -0.199 | -0.207 | | i35 | -0.435 | -0.481 |
| i11 | 0.158 | 0.018 | | i36 | -0.338 | -0.287 |
| i12 | 0.305 | 0.165 | | i37 | -0.381 | -0.452 |
| i13 | 0.089 | -0.039 | | i38 | -0.294 | -0.338 |
| i14 | 0.180 | 0.064 | | i39 | -0.458 | -0.536 |
| i15 | -0.389 | -0.442 | | i40 | -0.461 | -0.497 |
| i16 | -0.407 | -0.359 | | i41 | -0.447 | -0.385 |
| i17 | -0.399 | -0.439 | | i42 | -0.425 | -0.496 |
| i18 | -0.477 | -0.538 | | i43 | -0.380 | -0.418 |
| i19 | 0.174 | 0.050 | | i44 | -0.468 | -0.559 |
| i20 | -0.218 | -0.230 | | i45 | -0.387 | -0.338 |
| i21 | 0.288 | 0.159 | | i46 | -0.244 | -0.212 |
| i22 | -0.451 | -0.492 | | i47 | 0.313 | 0.169 |
| i23 | 0.272 | 0.140 | | i48 | -0.425 | -0.471 |
| i24 | -0.431 | -0.504 | | i49 | -0.412 | -0.390 |
| i25 | -0.270 | -0.273 | | i50 | 0.218 | 0.058 |

ORGANIZATION DATA

Table B2: Organization Data, Correlation of items to total scores

| Correlations | | | | Correlations | | |
|--------------|--------|--------|--|--------------|--------|--------|
| | PO | DO | | | PO | DO |
| i1 | -0.179 | -0.196 | | i26 | -0.202 | -0.205 |
| i2 | -0.081 | -0.111 | | i27 | -0.446 | -0.462 |
| i3 | 0.292 | 0.137 | | i28 | -0.457 | -0.573 |
| i4 | 0.153 | 0.008 | | i29 | -0.423 | -0.530 |
| i5 | 0.313 | 0.143 | | i30 | -0.304 | -0.252 |
| i6 | -0.356 | -0.455 | | i31 | -0.431 | -0.513 |
| i7 | -0.371 | -0.307 | | i32 | 0.259 | 0.091 |
| i8 | -0.363 | -0.345 | | i33 | -0.390 | -0.496 |
| i9 | 0.094 | -0.014 | | i34 | -0.466 | -0.558 |
| i10 | -0.161 | -0.162 | | i35 | -0.394 | -0.451 |
| i11 | 0.181 | 0.025 | | i36 | -0.375 | -0.316 |
| i12 | 0.318 | 0.155 | | i37 | -0.368 | -0.459 |
| i13 | 0.112 | -0.032 | | i38 | -0.256 | -0.305 |
| i14 | 0.187 | 0.063 | | i39 | -0.460 | -0.561 |
| i15 | -0.348 | -0.414 | | i40 | -0.459 | -0.499 |
| i16 | -0.439 | -0.390 | | i41 | -0.467 | -0.393 |
| i17 | -0.367 | -0.414 | | i42 | -0.450 | -0.546 |
| i18 | -0.414 | -0.495 | | i43 | -0.370 | -0.420 |
| i19 | 0.190 | 0.056 | | i44 | -0.449 | -0.565 |
| i20 | -0.189 | -0.195 | | i45 | -0.439 | -0.377 |
| i21 | 0.291 | 0.139 | | i46 | -0.282 | -0.248 |
| i22 | -0.454 | -0.497 | | i47 | 0.323 | 0.146 |
| i23 | 0.296 | 0.132 | | i48 | -0.381 | -0.441 |
| i24 | -0.395 | -0.490 | | i49 | -0.413 | -0.386 |
| i25 | -0.253 | -0.238 | | i50 | 0.249 | 0.064 |



Appendix C: IDI Item correlations to subscores – Education Data

Table C1: Correlations of items in the Denial scale to subscores

| Correlations of items in the Denial scale to subscores | | | | | |
|--------------------------------------------------------|--------|--------|--------|--------|--------|
| | DEN | POL | Min | Acc | Ada |
| i1 | -0.480 | -0.146 | -0.027 | -0.062 | -0.045 |
| i17 | -0.660 | -0.361 | -0.075 | -0.097 | -0.040 |
| i27 | -0.646 | -0.364 | -0.158 | -0.102 | -0.089 |
| i35 | -0.690 | -0.405 | -0.093 | -0.071 | -0.046 |
| i38 | -0.583 | -0.290 | -0.006 | -0.067 | -0.007 |
| i43 | -0.605 | -0.369 | -0.047 | -0.105 | -0.053 |
| i48 | -0.649 | -0.410 | -0.091 | -0.076 | -0.034 |

Table C2: Within item correlations for items in the Denial scale

| Correlation within items in the Denial scale | | | | | | | |
|----------------------------------------------|-------|-------|-------|-------|-------|-------|-----|
| | i1 | i17 | i27 | i35 | i38 | i43 | i48 |
| i1 | 1 | | | | | | |
| i17 | 0.160 | 1 | | | | | |
| i27 | 0.170 | 0.315 | 1 | | | | |
| i35 | 0.149 | 0.412 | 0.370 | 1 | | | |
| i38 | 0.213 | 0.281 | 0.240 | 0.258 | 1 | | |
| i43 | 0.170 | 0.348 | 0.317 | 0.306 | 0.366 | 1 | |
| i48 | 0.153 | 0.332 | 0.306 | 0.347 | 0.295 | 0.364 | 1 |



Table C3: Correlations of items in the Polarization scale to subscores

| Correlations of items in the Polarization scale to subscores | | | | | |
|--------------------------------------------------------------|--------|--------|--------|--------|--------|
| | DEN | POL | MIN | ACC | ADA |
| i6 | -0.228 | -0.550 | -0.081 | 0.032 | 0.097 |
| i15 | -0.460 | -0.454 | -0.116 | -0.045 | 0.035 |
| i18 | -0.221 | -0.598 | -0.098 | -0.070 | -0.005 |
| i22 | -0.526 | -0.485 | -0.127 | -0.097 | -0.037 |
| i24 | -0.171 | -0.586 | -0.078 | -0.018 | 0.036 |
| i28 | -0.275 | -0.682 | -0.085 | -0.023 | 0.072 |
| i29 | -0.273 | -0.576 | -0.072 | 0.017 | 0.090 |
| i31 | -0.271 | -0.565 | -0.122 | -0.036 | 0.065 |
| i33 | -0.142 | -0.587 | -0.071 | 0.019 | 0.063 |
| i34 | -0.473 | -0.616 | -0.077 | -0.063 | 0.004 |
| i37 | -0.166 | -0.525 | -0.069 | -0.004 | 0.054 |
| i39 | -0.449 | -0.608 | -0.096 | -0.036 | 0.064 |
| i40 | -0.464 | -0.495 | -0.167 | -0.098 | -0.033 |
| i42 | -0.397 | -0.553 | -0.128 | -0.019 | 0.075 |
| i44 | -0.245 | -0.656 | -0.089 | 0.008 | 0.083 |

Table C4: Within item correlations for items in the Polarization scale

| Correlations within items from the Polarization scale | | | | | | | | | | | | | | | |
|-------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----|
| | i6 | i15 | i18 | i22 | i24 | i28 | i29 | i31 | i33 | i34 | i37 | i39 | i40 | i42 | i44 |
| i6 | 1 | | | | | | | | | | | | | | |
| i15 | 0.202 | 1 | | | | | | | | | | | | | |
| i18 | 0.379 | 0.168 | 1 | | | | | | | | | | | | |
| i22 | 0.151 | 0.348 | 0.126 | 1 | | | | | | | | | | | |
| i24 | 0.291 | 0.107 | 0.437 | 0.113 | 1 | | | | | | | | | | |
| i28 | 0.369 | 0.191 | 0.449 | 0.187 | 0.432 | 1 | | | | | | | | | |
| i29 | 0.288 | 0.182 | 0.282 | 0.181 | 0.268 | 0.504 | 1 | | | | | | | | |
| i31 | 0.252 | 0.166 | 0.294 | 0.347 | 0.302 | 0.382 | 0.276 | 1 | | | | | | | |
| i33 | 0.292 | 0.092 | 0.376 | 0.079 | 0.445 | 0.405 | 0.289 | 0.313 | 1 | | | | | | |
| i34 | 0.230 | 0.302 | 0.259 | 0.387 | 0.261 | 0.338 | 0.284 | 0.285 | 0.269 | 1 | | | | | |
| i37 | 0.255 | 0.097 | 0.346 | 0.091 | 0.381 | 0.336 | 0.212 | 0.251 | 0.348 | 0.243 | 1 | | | | |
| i39 | 0.230 | 0.314 | 0.167 | 0.385 | 0.203 | 0.311 | 0.283 | 0.249 | 0.195 | 0.489 | 0.197 | 1 | | | |
| i40 | 0.148 | 0.324 | 0.132 | 0.540 | 0.104 | 0.194 | 0.191 | 0.262 | 0.096 | 0.378 | 0.095 | 0.437 | 1 | | |
| i42 | 0.209 | 0.280 | 0.163 | 0.325 | 0.145 | 0.283 | 0.339 | 0.214 | 0.168 | 0.379 | 0.085 | 0.503 | 0.387 | 1 | |
| i44 | 0.322 | 0.164 | 0.366 | 0.148 | 0.388 | 0.429 | 0.357 | 0.313 | 0.514 | 0.303 | 0.339 | 0.337 | 0.174 | 0.335 | 1 |



Table C5: Correlation of items in the Minimization scale to subscores

| Correlations of items in the Minimization scale to subscores | | | | | |
|---------------------------------------------------------------------|--------|--------|--------|--------|--------|
| | DEN | POL | MIN | ACC | ADA |
| i7 | -0.061 | -0.060 | -0.643 | -0.069 | 0.026 |
| i8 | -0.193 | -0.203 | -0.492 | -0.024 | 0.076 |
| i16 | -0.141 | -0.154 | -0.566 | -0.082 | -0.034 |
| i30 | 0.077 | -0.004 | -0.604 | 0.003 | 0.073 |
| i36 | -0.009 | -0.047 | -0.684 | -0.024 | 0.074 |
| i41 | -0.114 | -0.129 | -0.695 | -0.100 | -0.012 |
| i45 | -0.079 | -0.110 | -0.643 | -0.045 | 0.021 |
| i46 | 0.061 | -0.027 | -0.588 | 0.044 | 0.117 |
| i49 | -0.170 | -0.190 | -0.612 | -0.022 | 0.081 |

Table C6: Within item correlations for items in the Minimization scale

| Correlations within items from the Minimization scale | | | | | | | | | |
|--------------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-----|
| | i7 | i8 | i16 | i30 | i36 | i41 | i45 | i46 | i49 |
| i7 | 1 | | | | | | | | |
| i8 | 0.297 | 1 | | | | | | | |
| i16 | 0.246 | 0.204 | 1 | | | | | | |
| i30 | 0.305 | 0.166 | 0.211 | 1 | | | | | |
| i36 | 0.434 | 0.220 | 0.245 | 0.488 | 1 | | | | |
| i41 | 0.423 | 0.219 | 0.268 | 0.343 | 0.417 | 1 | | | |
| i45 | 0.261 | 0.179 | 0.234 | 0.381 | 0.387 | 0.506 | 1 | | |
| i46 | 0.224 | 0.179 | 0.271 | 0.316 | 0.319 | 0.300 | 0.329 | 1 | |
| i49 | 0.227 | 0.228 | 0.396 | 0.259 | 0.299 | 0.307 | 0.305 | 0.415 | 1 |



Table C7: Correlation of items in the Acceptance scale to subscores

| Correlations of items in the Acceptance scale to subscores | | | | | |
|-------------------------------------------------------------------|-------|-------|-------|-------|-------|
| | DEN | POL | MIN | ACC | ADA |
| i3 | 0.061 | 0.021 | 0.066 | 0.720 | 0.312 |
| i5 | 0.069 | 0.021 | 0.086 | 0.754 | 0.334 |
| i21 | 0.135 | 0.043 | 0.036 | 0.681 | 0.375 |
| i23 | 0.095 | 0.036 | 0.007 | 0.659 | 0.416 |
| i47 | 0.120 | 0.050 | 0.019 | 0.734 | 0.450 |

Table C8: Within item correlations for items in the Acceptance scale

| Correlations within items in the Acceptance scale | | | | | |
|----------------------------------------------------------|-------|-------|-------|-------|-----|
| | i3 | i5 | i21 | i23 | i47 |
| i3 | 1 | | | | |
| i5 | 0.525 | 1 | | | |
| i21 | 0.317 | 0.378 | 1 | | |
| i23 | 0.263 | 0.307 | 0.389 | 1 | |
| i47 | 0.353 | 0.401 | 0.414 | 0.464 | 1 |



Table C9: Correlations of items in the Adaption scale to subscores

| Correlations of items in the Adaption scale to subscores | | | | | |
|-----------------------------------------------------------------|--------|--------|--------|-------|-------|
| | DEN | POL | MIN | ACC | ADA |
| i4 | -0.090 | -0.111 | 0.088 | 0.256 | 0.435 |
| i9 | 0.035 | -0.055 | -0.184 | 0.208 | 0.547 |
| i11 | 0.025 | -0.078 | -0.056 | 0.264 | 0.670 |
| i12 | 0.134 | 0.044 | 0.020 | 0.408 | 0.637 |
| i13 | -0.008 | -0.116 | -0.091 | 0.224 | 0.607 |
| i14 | 0.074 | -0.020 | -0.045 | 0.296 | 0.545 |
| i19 | 0.087 | -0.028 | -0.088 | 0.271 | 0.630 |
| i32 | 0.132 | 0.010 | -0.047 | 0.444 | 0.643 |
| i50 | 0.020 | -0.070 | 0.013 | 0.424 | 0.648 |

Table C10: Within item correlations for items in the Adaption scale

| Correlations within items in the Adaption scale | | | | | | | | | |
|--------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-----|
| | i4 | i9 | i11 | i12 | i13 | i14 | i19 | i32 | i50 |
| i4 | 1 | | | | | | | | |
| i9 | 0.006 | 1 | | | | | | | |
| i11 | 0.295 | 0.271 | 1 | | | | | | |
| i12 | 0.176 | 0.268 | 0.364 | 1 | | | | | |
| i13 | 0.132 | 0.290 | 0.342 | 0.304 | 1 | | | | |
| i14 | 0.076 | 0.229 | 0.217 | 0.308 | 0.286 | 1 | | | |
| i19 | 0.164 | 0.305 | 0.502 | 0.328 | 0.317 | 0.232 | 1 | | |
| i32 | 0.110 | 0.333 | 0.294 | 0.373 | 0.300 | 0.302 | 0.321 | 1 | |
| i50 | 0.302 | 0.204 | 0.384 | 0.348 | 0.299 | 0.234 | 0.334 | 0.354 | 1 |



Appendix D: IDI Item correlations to subscores – Organization Data

Table D1: Correlations of items in the Denial scale to subscores

| Correlations of items in the Denial scale to subscores | | | | | |
|--------------------------------------------------------|--------|--------|--------|--------|--------|
| | DEN | POL | Min | Acc | Ada |
| i1 | -0.465 | -0.108 | -0.026 | -0.052 | -0.037 |
| i17 | -0.634 | -0.336 | -0.097 | -0.061 | -0.008 |
| i27 | -0.644 | -0.338 | -0.168 | -0.123 | -0.110 |
| i35 | -0.685 | -0.380 | -0.086 | -0.035 | -0.017 |
| i38 | -0.552 | -0.254 | -0.024 | -0.022 | 0.010 |
| i43 | -0.587 | -0.368 | -0.093 | -0.059 | -0.004 |
| i48 | -0.628 | -0.391 | -0.078 | -0.030 | -0.010 |

Table D2: Within item correlations for items in the Denial scale

| Correlation within items in the Denial scale | | | | | | | |
|----------------------------------------------|-------|-------|-------|-------|-------|-------|-----|
| | i1 | i17 | i27 | i35 | i38 | i43 | i48 |
| i1 | 1 | | | | | | |
| i17 | 0.132 | 1 | | | | | |
| i27 | 0.148 | 0.297 | 1 | | | | |
| i35 | 0.123 | 0.385 | 0.374 | 1 | | | |
| i38 | 0.189 | 0.244 | 0.199 | 0.239 | 1 | | |
| i43 | 0.131 | 0.340 | 0.288 | 0.326 | 0.291 | 1 | |
| i48 | 0.122 | 0.306 | 0.274 | 0.324 | 0.297 | 0.356 | 1 |



Table D3: Correlations of items in the Polarization scale to subscores

| Correlations of items in the Polarization scale to subscores | | | | | |
|--------------------------------------------------------------|--------|--------|--------|--------|--------|
| | DEN | POL | MIN | ACC | ADA |
| i6 | -0.221 | -0.536 | -0.072 | 0.070 | 0.114 |
| i15 | -0.440 | -0.421 | -0.125 | -0.005 | 0.070 |
| i18 | -0.229 | -0.574 | -0.042 | -0.024 | 0.016 |
| i22 | -0.484 | -0.488 | -0.146 | -0.087 | -0.046 |
| i24 | -0.162 | -0.597 | -0.038 | 0.036 | 0.050 |
| i28 | -0.265 | -0.691 | -0.054 | 0.033 | 0.103 |
| i29 | -0.277 | -0.629 | -0.052 | 0.044 | 0.088 |
| i31 | -0.280 | -0.571 | -0.109 | -0.009 | 0.058 |
| i33 | -0.156 | -0.619 | -0.030 | 0.066 | 0.074 |
| i34 | -0.460 | -0.632 | -0.068 | -0.019 | 0.035 |
| i37 | -0.177 | -0.560 | -0.025 | 0.036 | 0.050 |
| i39 | -0.424 | -0.653 | -0.094 | 0.007 | 0.083 |
| i40 | -0.405 | -0.498 | -0.186 | -0.088 | -0.030 |
| i42 | -0.395 | -0.622 | -0.131 | 0.019 | 0.100 |
| i44 | -0.252 | -0.683 | -0.058 | 0.056 | 0.096 |

Table D4: Within item correlations for items in the Polarization scale

| Correlations within items from the Polarization scale | | | | | | | | | | | | | | | |
|-------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----|
| | i6 | i15 | i18 | i22 | i24 | i28 | i29 | i31 | i33 | i34 | i37 | i39 | i40 | i42 | i44 |
| i6 | 1 | | | | | | | | | | | | | | |
| i15 | 0.188 | 1 | | | | | | | | | | | | | |
| i18 | 0.357 | 0.151 | 1 | | | | | | | | | | | | |
| i22 | 0.150 | 0.314 | 0.155 | 1 | | | | | | | | | | | |
| i24 | 0.276 | 0.093 | 0.389 | 0.149 | 1 | | | | | | | | | | |
| i28 | 0.348 | 0.178 | 0.420 | 0.202 | 0.438 | 1 | | | | | | | | | |
| i29 | 0.308 | 0.187 | 0.345 | 0.184 | 0.332 | 0.572 | 1 | | | | | | | | |
| i31 | 0.228 | 0.171 | 0.283 | 0.370 | 0.305 | 0.381 | 0.312 | 1 | | | | | | | |
| i33 | 0.295 | 0.098 | 0.339 | 0.113 | 0.462 | 0.424 | 0.358 | 0.330 | 1 | | | | | | |
| i34 | 0.258 | 0.307 | 0.287 | 0.373 | 0.269 | 0.375 | 0.343 | 0.308 | 0.303 | 1 | | | | | |
| i37 | 0.260 | 0.085 | 0.321 | 0.126 | 0.387 | 0.343 | 0.298 | 0.264 | 0.372 | 0.254 | 1 | | | | |
| i39 | 0.255 | 0.315 | 0.225 | 0.377 | 0.258 | 0.368 | 0.318 | 0.280 | 0.268 | 0.512 | 0.256 | 1 | | | |
| i40 | 0.145 | 0.275 | 0.154 | 0.517 | 0.138 | 0.206 | 0.196 | 0.287 | 0.129 | 0.353 | 0.131 | 0.415 | 1 | | |
| i42 | 0.239 | 0.289 | 0.219 | 0.328 | 0.213 | 0.356 | 0.358 | 0.264 | 0.244 | 0.429 | 0.225 | 0.540 | 0.397 | 1 | |
| i44 | 0.316 | 0.165 | 0.353 | 0.173 | 0.407 | 0.461 | 0.401 | 0.334 | 0.539 | 0.344 | 0.376 | 0.398 | 0.206 | 0.402 | 1 |



Table D5: Correlation of items in the Minimization scale to subscores

| Correlations of items in the Minimization scale to subscores | | | | | |
|---------------------------------------------------------------------|--------|--------|--------|--------|--------|
| | DEN | POL | MIN | ACC | ADA |
| i7 | -0.056 | -0.032 | -0.657 | -0.080 | 0.017 |
| i8 | -0.145 | -0.146 | -0.533 | -0.040 | 0.082 |
| i16 | -0.165 | -0.152 | -0.585 | -0.103 | -0.030 |
| i30 | 0.020 | -0.011 | -0.614 | -0.036 | 0.063 |
| i36 | -0.026 | -0.038 | -0.700 | -0.061 | 0.061 |
| i41 | -0.118 | -0.095 | -0.696 | -0.136 | -0.045 |
| i45 | -0.113 | -0.103 | -0.658 | -0.105 | -0.022 |
| i46 | 0.008 | -0.023 | -0.609 | 0.011 | 0.123 |
| i49 | -0.161 | -0.151 | -0.626 | -0.041 | 0.084 |

Table D6: Within item correlations for items in the Minimization scale

| Correlations within items from the Minimization scale | | | | | | | | | |
|--------------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | i7 | i8 | i16 | i30 | i36 | i41 | i45 | i46 | i49 |
| i7 | 1 | | | | | | | | |
| i8 | 0.341 | 1 | | | | | | | |
| i16 | 0.256 | 0.234 | 1 | | | | | | |
| i30 | 0.334 | 0.208 | 0.230 | 1 | | | | | |
| i36 | 0.459 | 0.268 | 0.277 | 0.516 | 1 | | | | |
| i41 | 0.445 | 0.256 | 0.285 | 0.345 | 0.423 | 1 | | | |
| i45 | 0.288 | 0.215 | 0.279 | 0.390 | 0.396 | 0.520 | 1 | | |
| i46 | 0.253 | 0.228 | 0.286 | 0.319 | 0.357 | 0.313 | 0.346 | 1 | |
| i49 | 0.240 | 0.245 | 0.413 | 0.275 | 0.320 | 0.313 | 0.337 | 0.445 | 0.117 |



Table D7: Correlation of items in the Acceptance scale to subscores

| Correlations of items in the Acceptance scale to subscores | | | | | |
|-------------------------------------------------------------------|-------|--------|-------|-------|-------|
| | DEN | POL | MIN | ACC | ADA |
| i3 | 0.056 | -0.009 | 0.083 | 0.753 | 0.357 |
| i5 | 0.053 | -0.024 | 0.112 | 0.788 | 0.387 |
| i21 | 0.101 | -0.016 | 0.084 | 0.691 | 0.380 |
| i23 | 0.066 | -0.014 | 0.053 | 0.701 | 0.457 |
| i47 | 0.079 | -0.017 | 0.064 | 0.767 | 0.485 |

Table D8: Within item correlations for items in the Acceptance scale

| Correlations within items in the Acceptance scale | | | | | |
|----------------------------------------------------------|-------|-------|-------|-------|-----|
| | i3 | i5 | i21 | i23 | i47 |
| i3 | 1 | | | | |
| i5 | 0.590 | 1 | | | |
| i21 | 0.353 | 0.423 | 1 | | |
| i23 | 0.326 | 0.372 | 0.431 | 1 | |
| i47 | 0.418 | 0.472 | 0.451 | 0.528 | 1 |



Table D9: Correlations of items in the Adaption scale to subscores

| Correlations of items in the Adaption scale to subscores | | | | | |
|-----------------------------------------------------------------|--------|--------|--------|-------|-------|
| | DEN | POL | MIN | ACC | ADA |
| i4 | -0.087 | -0.134 | 0.109 | 0.319 | 0.456 |
| i9 | 0.030 | -0.041 | -0.188 | 0.224 | 0.570 |
| i11 | 0.017 | -0.084 | -0.052 | 0.289 | 0.688 |
| i12 | 0.099 | 0.006 | 0.052 | 0.432 | 0.656 |
| i13 | -0.016 | -0.115 | -0.099 | 0.249 | 0.641 |
| i14 | 0.059 | -0.025 | -0.039 | 0.294 | 0.541 |
| i19 | 0.073 | -0.032 | -0.073 | 0.273 | 0.631 |
| i32 | 0.091 | -0.037 | -0.040 | 0.478 | 0.674 |
| i50 | 0.016 | -0.090 | 0.024 | 0.478 | 0.682 |

Table D10: Within item correlations for items in the Adaption scale

| Correlations within items in the Adaption scale | | | | | | | | | |
|--------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-----|
| | i4 | i9 | i11 | i12 | i13 | i14 | i19 | i32 | i50 |
| i4 | 1 | | | | | | | | |
| i9 | 0.036 | 1 | | | | | | | |
| i11 | 0.289 | 0.316 | 1 | | | | | | |
| i12 | 0.218 | 0.281 | 0.397 | 1 | | | | | |
| i13 | 0.163 | 0.326 | 0.393 | 0.340 | 1 | | | | |
| i14 | 0.098 | 0.234 | 0.227 | 0.303 | 0.284 | 1 | | | |
| i19 | 0.174 | 0.328 | 0.517 | 0.340 | 0.347 | 0.227 | 1 | | |
| i32 | 0.148 | 0.366 | 0.346 | 0.402 | 0.355 | 0.314 | 0.345 | 1 | |
| i50 | 0.332 | 0.241 | 0.418 | 0.391 | 0.351 | 0.249 | 0.357 | 0.407 | 1 |



Appendix E: Confirmatory Factor analysis for Education

Education, 50,000 respondents, all items included

Model Fit Summary

CMIN

| Model | NPAR | CMIN | DF | P | CMIN/DF |
|--------------------|------|------------|-----|------|---------|
| Default model | 100 | 143164.473 | 935 | .000 | 153.117 |
| Saturated model | 1035 | .000 | 0 | | |
| Independence model | 45 | 601402.628 | 990 | .000 | 607.477 |

RMR, GFI

| Model | RMR | GFI | AGFI | PGFI |
|--------------------|------|-------|------|------|
| Default model | .072 | .846 | .830 | .764 |
| Saturated model | .000 | 1.000 | | |
| Independence model | .201 | .440 | .415 | .421 |

Baseline Comparisons

| Model | NFI | RFI | IFI | TLI | CFI |
|--------------------|--------|------|--------|------|-------|
| | Delta1 | rho1 | Delta2 | rho2 | |
| Default model | .762 | .748 | .763 | .749 | .763 |
| Saturated model | 1.000 | | 1.000 | | 1.000 |
| Independence model | .000 | .000 | .000 | .000 | .000 |

Parsimony-Adjusted Measures

| Model | PRATIO | PNFI | PCFI |
|--------------------|--------|------|------|
| Default model | .944 | .720 | .721 |
| Saturated model | .000 | .000 | .000 |
| Independence model | 1.000 | .000 | .000 |

NCP

| Model | NCP | LO 90 | HI 90 |
|--------------------|------------|------------|------------|
| Default model | 142229.473 | 140989.924 | 143475.310 |
| Saturated model | .000 | .000 | .000 |
| Independence model | 600412.628 | 597865.645 | 602965.889 |



FMIN

| Model | FMIN | F0 | LO 90 | HI 90 |
|--------------------|--------|--------|--------|--------|
| Default model | 2.863 | 2.845 | 2.820 | 2.870 |
| Saturated model | .000 | .000 | .000 | .000 |
| Independence model | 12.028 | 12.008 | 11.958 | 12.060 |

RMSEA

| Model | RMSEA | LO 90 | HI 90 | PCLOSE |
|--------------------|-------|-------|-------|--------|
| Default model | .055 | .055 | .055 | .000 |
| Independence model | .110 | .110 | .110 | .000 |

AIC

| Model | AIC | BCC | BIC | CAIC |
|--------------------|------------|------------|------------|------------|
| Default model | 143364.473 | 143364.657 | 144246.451 | 144346.451 |
| Saturated model | 2070.000 | 2071.906 | 11198.471 | 12233.471 |
| Independence model | 601492.628 | 601492.711 | 601889.518 | 601934.518 |

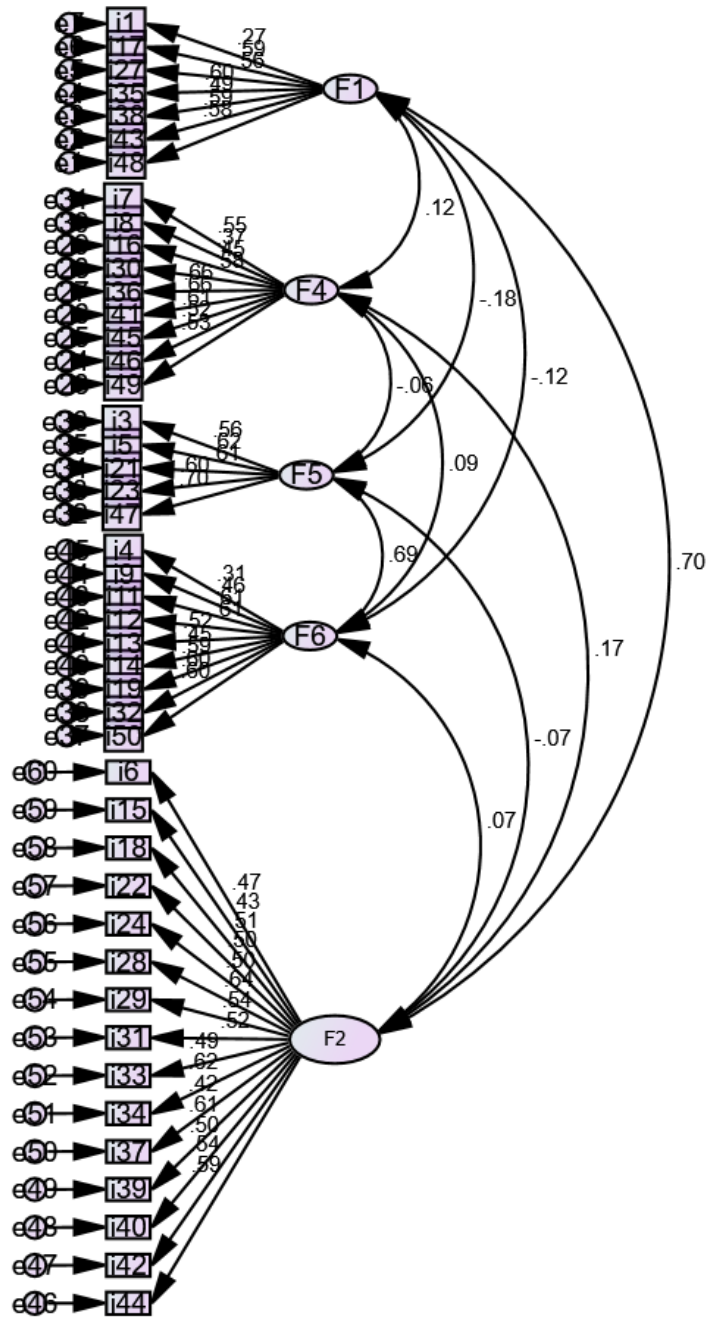
ECVI

| Model | ECVI | LO 90 | HI 90 | MECVI |
|--------------------|--------|--------|--------|--------|
| Default model | 2.867 | 2.843 | 2.892 | 2.867 |
| Saturated model | .041 | .041 | .041 | .041 |
| Independence model | 12.030 | 11.979 | 12.081 | 12.030 |

HOELTER

| Model | HOELTER | HOELTER |
|--------------------|---------|---------|
| | .05 | .01 |
| Default model | 352 | 363 |
| Independence model | 89 | 92 |





IDI Five-factor solution

Education, 50,000 respondents, Items #1, 4, and 8 removed

Model Fit Summary

CMIN

| Model | NPAR | CMIN | DF | P | CMIN/DF |
|--------------------|------|------------|-----|------|---------|
| Default model | 94 | 131028.949 | 809 | .000 | 161.964 |
| Saturated model | 903 | .000 | 0 | | |
| Independence model | 42 | 576556.205 | 861 | .000 | 669.636 |

RMR, GFI

| Model | RMR | GFI | AGFI | PGFI |
|--------------------|------|-------|------|------|
| Default model | .070 | .848 | .830 | .759 |
| Saturated model | .000 | 1.000 | | |
| Independence model | .207 | .437 | .410 | .417 |

Baseline Comparisons

| Model | NFI Delta1 | RFI rho1 | IFI Delta2 | TLI rho2 | CFI |
|--------------------|---------------|-------------|---------------|-------------|-------|
| Default model | .773 | .758 | .774 | .759 | .774 |
| Saturated model | 1.000 | | 1.000 | | 1.000 |
| Independence model | .000 | .000 | .000 | .000 | .000 |

Parsimony-Adjusted Measures

| Model | PRATIO | PNFI | PCFI |
|--------------------|--------|------|------|
| Default model | .940 | .726 | .727 |
| Saturated model | .000 | .000 | .000 |
| Independence model | 1.000 | .000 | .000 |

NCP

| Model | NCP | LO 90 | HI 90 |
|--------------------|------------|------------|------------|
| Default model | 130219.949 | 129034.129 | 131412.057 |
| Saturated model | .000 | .000 | .000 |
| Independence model | 575695.205 | 573201.360 | 578195.327 |



FMIN

| Model | FMIN | F0 | LO 90 | HI 90 |
|--------------------|--------|--------|--------|--------|
| Default model | 2.621 | 2.604 | 2.581 | 2.628 |
| Saturated model | .000 | .000 | .000 | .000 |
| Independence model | 11.531 | 11.514 | 11.464 | 11.564 |

RMSEA

| Model | RMSEA | LO 90 | HI 90 | PCLOSE |
|--------------------|-------|-------|-------|--------|
| Default model | .057 | .056 | .057 | .000 |
| Independence model | .116 | .115 | .116 | .000 |

AIC

| Model | AIC | BCC | BIC | CAIC |
|--------------------|------------|------------|------------|------------|
| Default model | 131216.949 | 131217.111 | 132046.008 | 132140.008 |
| Saturated model | 1806.000 | 1807.555 | 9770.260 | 10673.260 |
| Independence model | 576640.205 | 576640.277 | 577010.635 | 577052.635 |

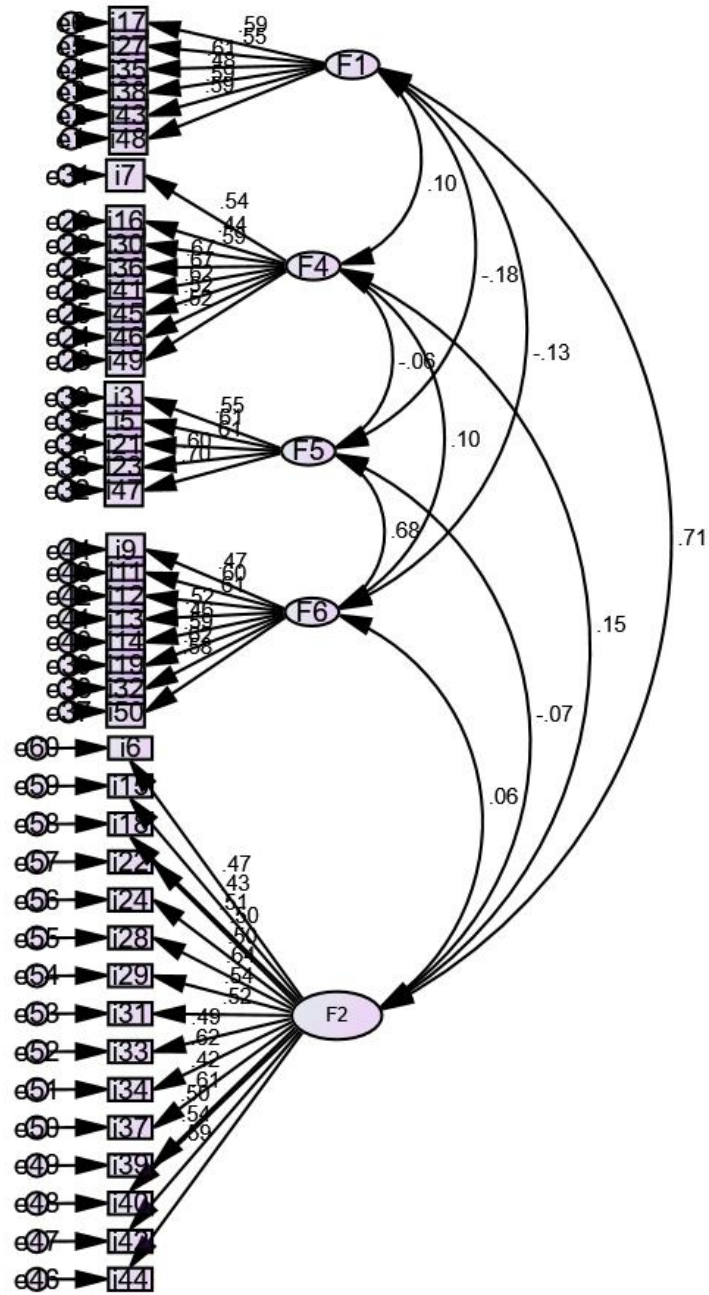
ECVI

| Model | ECVI | LO 90 | HI 90 | MECVI |
|--------------------|--------|--------|--------|--------|
| Default model | 2.624 | 2.601 | 2.648 | 2.624 |
| Saturated model | .036 | .036 | .036 | .036 |
| Independence model | 11.533 | 11.483 | 11.583 | 11.533 |

HOELTER

| Model | HOELTER | HOELTER |
|--------------------|---------|---------|
| | .05 | .01 |
| Default model | 335 | 346 |
| Independence model | 81 | 84 |





Appendix F: Confirmatory factor analysis results for IDI Organizational

Organizational Level data, 50,000 respondents, All items included

Model Fit Summary

CMIN

| Model | NP | DF | CMIN | P | CMIN/DF |
|--------------------|------|-----|------------|------|---------|
| Default model | 100 | 935 | 129354.844 | .000 | 138.347 |
| Saturated model | 1035 | 0 | .000 | | |
| Independence model | 45 | 990 | 642563.730 | .000 | 649.054 |

RMR, GFI

| Model | RMR | GFI | AGFI | PGFI |
|--------------------|------|-------|------|------|
| Default model | .064 | .867 | .853 | .784 |
| Saturated model | .000 | 1.000 | | |
| Independence model | .203 | .419 | .392 | .400 |

Baseline Comparisons

| Model | NFI Delta1 | RFI rho1 | IFI Delta2 | TLI rho2 | CFI |
|--------------------|---------------|-------------|---------------|-------------|-------|
| Default model | .799 | .787 | .800 | .788 | .800 |
| Saturated model | 1.000 | | 1.000 | | 1.000 |
| Independence model | .000 | .000 | .000 | .000 | .000 |

Parsimony-Adjusted Measures

| Model | PRATIO | PNFI | PCFI |
|--------------------|--------|------|------|
| Default model | .944 | .754 | .755 |
| Saturated model | .000 | .000 | .000 |
| Independence model | 1.000 | .000 | .000 |

NCP

| Model | NCP | LO 90 | HI 90 |
|--------------------|------------|------------|------------|
| Default model | 128419.844 | 127241.958 | 129604.021 |
| Saturated model | .000 | .000 | .000 |
| Independence model | 641573.730 | 638940.854 | 644212.884 |



FMIN

| Model | FMIN | F0 | LO 90 | HI 90 |
|--------------------|--------|--------|--------|--------|
| Default model | 2.587 | 2.568 | 2.545 | 2.592 |
| Saturated model | .000 | .000 | .000 | .000 |
| Independence model | 12.852 | 12.832 | 12.779 | 12.885 |

RMSEA

| Model | RMSEA | LO 90 | HI 90 | PCLOSE |
|--------------------|-------|-------|-------|--------|
| Default model | .052 | .052 | .053 | .000 |
| Independence model | .114 | .114 | .114 | .000 |

AIC

| Model | AIC | BCC | BIC | CAIC |
|--------------------|------------|------------|------------|------------|
| Default model | 129554.844 | 129555.029 | 130436.822 | 130536.822 |
| Saturated model | 2070.000 | 2071.906 | 11198.471 | 12233.471 |
| Independence model | 642653.730 | 642653.813 | 643050.620 | 643095.620 |

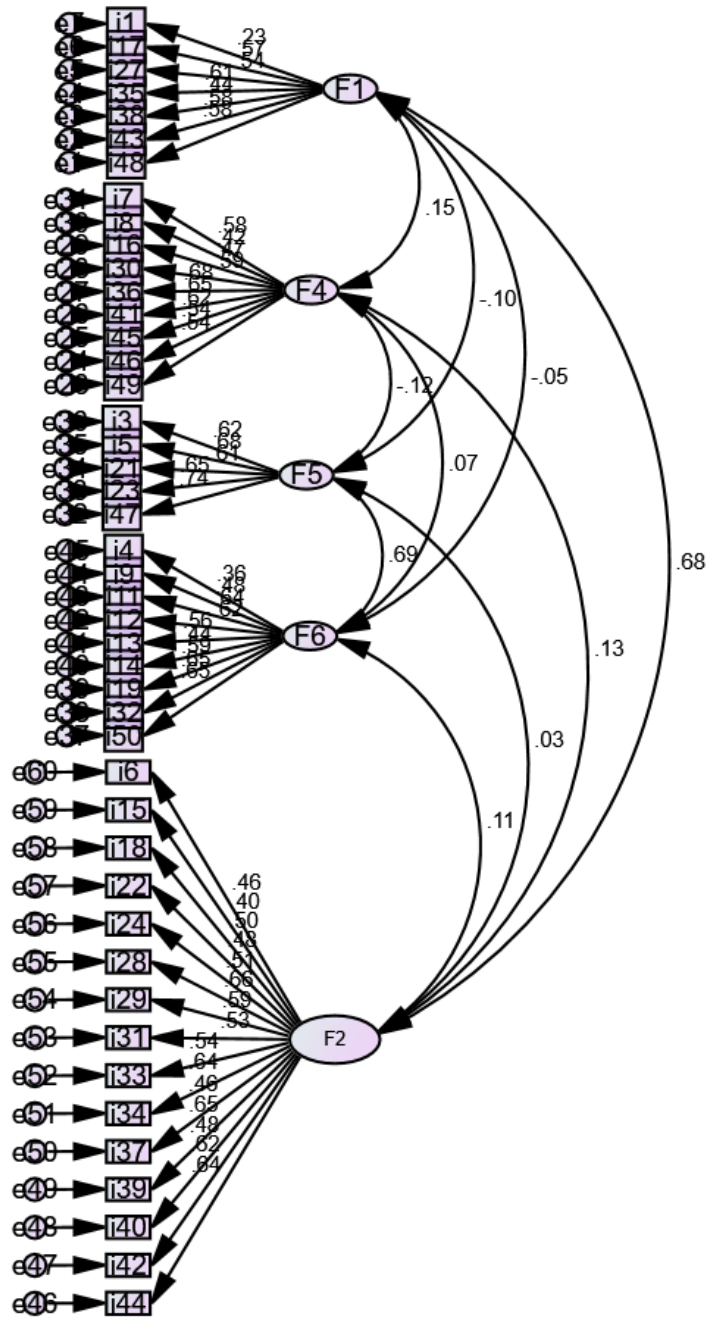
ECVI

| Model | ECVI | LO 90 | HI 90 | MECVI |
|--------------------|--------|--------|--------|--------|
| Default model | 2.591 | 2.568 | 2.615 | 2.591 |
| Saturated model | .041 | .041 | .041 | .041 |
| Independence model | 12.853 | 12.801 | 12.906 | 12.853 |

HOELTER

| Model | HOELTER | HOELTER |
|--------------------|---------|---------|
| | .05 | .01 |
| Default model | 390 | 402 |
| Independence model | 83 | 86 |





Organizational Level data, 50,000 respondents, Items #1, 4, and 8 removed

Model Fit Summary

CMIN

| Model | NPAR | CMIN | DF | P | CMIN/DF |
|--------------------|------|------------|-----|------|---------|
| Default model | 94 | 117975.211 | 809 | .000 | 145.828 |
| Saturated model | 903 | .000 | 0 | | |
| Independence model | 42 | 615737.756 | 861 | .000 | 715.143 |

RMR, GFI

| Model | RMR | GFI | AGFI | PGFI |
|--------------------|------|-------|------|------|
| Default model | .062 | .869 | .854 | .779 |
| Saturated model | .000 | 1.000 | | |
| Independence model | .208 | .416 | .387 | .397 |

Baseline Comparisons

| Model | NFI | RFI | IFI | TLI | CFI |
|--------------------|--------|------|--------|------|-------|
| | Delta1 | rho1 | Delta2 | rho2 | |
| Default model | .808 | .796 | .809 | .797 | .809 |
| Saturated model | 1.000 | | 1.000 | | 1.000 |
| Independence model | .000 | .000 | .000 | .000 | .000 |

Parsimony-Adjusted Measures

| Model | PRATIO | PNFI | PCFI |
|--------------------|--------|------|------|
| Default model | .940 | .760 | .761 |
| Saturated model | .000 | .000 | .000 |
| Independence model | 1.000 | .000 | .000 |

NCP

| Model | NCP | LO 90 | HI 90 |
|--------------------|------------|------------|------------|
| Default model | 117166.211 | 116041.364 | 118297.348 |
| Saturated model | .000 | .000 | .000 |
| Independence model | 614876.756 | 612299.399 | 617460.390 |



FMIN

| Model | FMIN | F0 | LO 90 | HI 90 |
|--------------------|--------|--------|--------|--------|
| Default model | 2.360 | 2.343 | 2.321 | 2.366 |
| Saturated model | .000 | .000 | .000 | .000 |
| Independence model | 12.315 | 12.298 | 12.246 | 12.349 |

RMSEA

| Model | RMSEA | LO 90 | HI 90 | PCLOSE |
|--------------------|-------|-------|-------|--------|
| Default model | .054 | .054 | .054 | .000 |
| Independence model | .120 | .119 | .120 | .000 |

AIC

| Model | AIC | BCC | BIC | CAIC |
|--------------------|------------|------------|------------|------------|
| Default model | 118163.211 | 118163.373 | 118992.270 | 119086.270 |
| Saturated model | 1806.000 | 1807.555 | 9770.260 | 10673.260 |
| Independence model | 615821.756 | 615821.828 | 616192.187 | 616234.187 |

ECVI

| Model | ECVI | LO 90 | HI 90 | MECVI |
|--------------------|--------|--------|--------|--------|
| Default model | 2.363 | 2.341 | 2.386 | 2.363 |
| Saturated model | .036 | .036 | .036 | .036 |
| Independence model | 12.317 | 12.265 | 12.368 | 12.317 |

HOELTER

| Model | HOELTER | HOELTER |
|--------------------|---------|---------|
| | .05 | .01 |
| Default model | 372 | 384 |
| Independence model | 76 | 78 |



