

Validating GLOBE's Societal Values Scales: A Test in the U.S.A.

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Abstract

Kluckhohn and Strodtbeck's seminal work less than half a century ago illustrates the relative Johnny-come-lately nature of cross-cultural research. The last fifty years have been dominated by such cross-cultural giants as Hofstede, Trompenaars and Hampden-Turner, Triandis, Schwartz, and the GLOBE authors. Each of these authors views cross-cultural studies through differing lenses, seldom agreeing on much, and more often than not disagreeing on concepts, theory, methodology, and application. The latest major contribution comes from GLOBE which Triandis has called the 'Manhattan Project' of cultural studies. It has also been said that the GLOBE project was the single most important piece of cross-cultural research in a quarter of a century. This study set out to validate several of the GLOBE cultural dimensions including validity and reliability tests of the GLOBE scales. The final GLOBE dimensions and measures used in this study were Gender Egalitarianism, Assertiveness, Performance Orientation, and Humane Orientation. The positivistic, quantitative methodology employed in this study was used to validate the borrowed GLOBE scales for each of the chosen and respective dimensions. These measures were analyzed using several multivariate analysis techniques. The GLOBE scales proved to be reliable and valid in the context of this study.

Keywords: GLOBE, scales, cross-cultural, culture, methods, quantitative

1. Introduction

Cultural differences result from the variations given to different values. Differing groups of people are different due, in part, to their underlying cultures or values. However, just to say that one society's culture is different from another's falls short of any meaningful or empirical evidence of a difference (Cullen and Parboteeah 2008). There must be a proper means of assessing cultural difference(s). Many researchers have developed models to assess how two or more cultures may be different or similar. These models include various dimensions. Although there have been several models developed at various points in time over the course of several decades, the results have similarities in describing core issues that differentiate one culture from another. These similarities allow researchers to settle on some universal dimensions and replicable models. However, there is debate in the literature as to how many unique cultural dimensions exist. Hofstede originally offered four, added a fifth (Hofstede, 2001), and then added two more in the VSM08. GLOBE has suggested nine unique dimensions (House, et. al., 2004).

Even though many prominent scholars agree that culture is historically determined, learned, persistent, contains subjective and objective elements, is collective and shared, and provides solutions to life's problems, these same scholars universally admit that culture is difficult to grasp. This difficulty is due, in part, to the lack of consistency in developing universally meaningful definitions, dimensions, scales, and measures (Earley 2006; Holt 2007).

Cross-cultural research projects must settle on a framework so meaningful comparison can be made (Earley 2006). This framework inherently must contain well defined dimensions, scales, and measurements in order to provide meaningful differences and similarities across cultures. Cavusgil and Das (1997) provide an appreciable approach to cross-cultural research beginning with theory and construct definition. Repeatedly, cross-cultural researchers emphasize the importance of properly defining the paradigm of culture, its conceptualization relative to the study at hand, and the underlying dimensions and means of measurement (see for example Earley (2006)). The study at hand is meant to test the validity of the four 'new' dimensions offered by GLOBE: Gender Egalitarianism, Assertiveness, Performance Orientation, and Humane Orientation.

2. Literature Review

There have been several cross-cultural frameworks proposed by scholars. Each allegedly offers researchers opportunities to compare and contrast cultures based on measurable and comparable dimensions (Adler 2008; Cullen and Parboteeah 2008; Deresky 2006; Hofstede 1980a, 2001; House et al. 2004; McFarlin and Sweeny 2006; Phatak et al. 2005; Trompenaars 1993a; Trompenaars and Hampden-Turner 1998). However, there is a noticeable lack of agreement on a universal definition of the actual dimensions used to make cross-cultural comparisons. Many authors have attributed much attention to the constructs and historical significance of Kluckhohn and Strodtbeck's initial cultural model. For example, Miroshnik (2001) and Adler (2002) speak of the significance that Kluckhohn and Strodtbeck (1961) have had on the study of culture. Triandis, when writing the forward to the recent GLOBE project's massive publication, described the GLOBE effort as the most massive and influential cross-cultural undertaking of its kind; going on to say that the GLOBE project will influence thousands of doctoral dissertations well into the future (Triandis 2004a). Smith (2006) spoke of the Hofstede and GLOBE models as 'elephants' in the realm of cross cultural studies. In addition, Trompenaars's 7d model is solidly grounded in Kluckhohn and Strodtbeck's initial work of 1961. Because of the newness of the GLOBE project, this study attempts to ferret out the newer, lesser studied dimensions of Gender Egalitarianism, Assertiveness, Performance Orientation, and Humane Orientation.

2.1 The GLOBE Studies (2004)

The most recent massive undertaking of primary cultural research was conducted by the group of scholars within the Global Leadership and Organizational Behavior Effectiveness research program (project GLOBE). The GLOBE study was a 10-year endeavor conducted by 170 investigators and included the testing of 27 hypotheses by sampling 17,300 respondents in 951 organizations from 62 societies. Building on Hofstede's framework, the GLOBE researchers developed nine cultural dimensions as outlined in Table 1.

Table 1: The GLOBE Study Cultural Dimensions; Adapted from House et al. (2004)

Dimension	Continuum
Uncertainty Avoidance	Low Uncertainty Avoidance vs. High Uncertainty Avoidance
Power Distance	Low Power Distance vs. High Power Distance
Institutional Collectivism	Individualism vs. Collectivism
In-group Collectivism	Individualism vs. Collectivism
Gender Egalitarianism	Feminine vs. Masculine demarcation
Assertiveness	Aggressive vs. nonaggressive
Future Orientation	Long-term orientation vs. Short-term orientation
Performance Orientation	High performance orientation vs. Low performance orientation
Humane Orientation	Power and self-enhancement vs. paternalism and altruism

Because the GLOBE study is a Johnny-come-lately relative to cultural studies, the debate is still open as to a number of facets of the study including (i) the need for nine dimensions, (ii) what GLOBE actually measured, (iii) the correlation of the dimensions to previous studies, and (iv) other unresolved issues relative to the methodology and conclusions (Earley 2006; Hofstede 2006; Javidan et al. 2006; Leung 2006; Smith 2006; Waldman, et al. 2006). Causing significant confusion is correlation of GLOBE's nine dimensions to previous research including Hofstede's five dimensions. Even so, there is little debate that the GLOBE studies do, in fact, build upon previous research by combining dimensions from previous models and adding dimensions of their own (Cullen and Parboteeah 2008; Deresky 2006; House et al. 2004; Triandis 2004a).

Within the literature, the GLOBE study's constructs and cultural dimensions are well-grounded in theory as will be further described later within the discussion of cultural dimensions. Each dimension builds upon prior researchers' constructs and dimensions. The jury is still out on the concepts, constructs, measurements, and validity of the GLOBE study. In essence, the GLOBE dimensions are a bit of a melting pot of the other models offered by scholars such as Kluckhohn and Strodtbeck, Hofstede, Schwartz, McCullen, and Trompenaars. Some of the more unique aspects of the GLOBE model warrant more attention and will be further as part of this study (Triandis 2004a).

Cultural Dimensions

Assertiveness

Creating the source of much of the criticism within his MAS dimension, Hofstede combined the concepts of assertiveness and gender equality into a single dimension, much to the ire of the GLOBE authors (Den Hartog 2004; Emrich et al. 2004; House and Javidan 2004). By his own admission, Hofstede (2001) states that there exist masculine and feminine behaviors which are driven by an assertive vs. nurturance value system. Whether this actually results in gender equality in education, politics, and the corporate world is one of the main concerns of the GLOBE authors and led them to split the MAS dimension. The GLOBE authors cited confusion and irrelevance within Hofstede's construct of masculinity and felt it necessary to split this concept into two dimensions. House and Javidan (2004) believe that the two new constructs of Assertiveness and Gender Egalitarianism help researchers avoid confusion and interpretation difficulties inherent in Hofstede's single dimension of masculinity.

Due to the recent bifurcation of the MAS dimension into the two resulting dimensions of Gender Egalitarianism and Assertiveness by the GLOBE authors, there have been few published studies to compare and validate the existence of these two supposedly independent dimensions. In effect, this creates two new dimensions that cannot be easily matched to prior models. For the purposes of this study, the GLOBE dimensions of Gender Egalitarianism and Assertiveness will be used as separate dimensions and measures rather than Hofstede's single Masculinity dimension. Assertiveness is discussed herein and Gender Egalitarianism (i.e. gender equality of roles) will be discussed separately.

The GLOBE authors defined assertiveness as the degree in which societies are assertive, tough, dominant, and/or aggressive. The actual scales used by GLOBE incorporated words like assertive, nonassertive, dominant, nondominant, tough, and tender (Den Hartog 2004). One of the main issues that GLOBE took with Hofstede's single MAS dimension is the fact that, although Hofstede claims the MAS dimension measured assertive values and behaviors in societies, his survey did not include items that specifically targeted assertiveness. In this regard, Hofstede's MAS dimension lacked face validity (Den Hartog 2004). Pinning the Assertiveness dimension, in part, on the work of Peabody (1985), the GLOBE authors speak of this dimension in terms of passive vs. forceful; conceited vs. modest; self-confidence vs. unassured; bold vs. timid; active vs. inactive behaviors and values. This results in varying levels of societal acceptance of these differing beliefs and values. In this regard, GLOBE did not find any past literature that has treated the concept of assertiveness as a separate cultural dimension (Den Hartog 2004; House and Javidan 2004). Assertiveness relates to adaptation, survivability, and integration of a cultural group and these are consistent with Schein's (1992, 2004) concepts of cultural dimensions. *Assertiveness*, then, is the degree to which people within a society are assertive, confrontational, or aggressive in relationships (Den Hartog 2004; Emrich et al. 2004; House and Javidan 2004).

Because this dimension is carved out of the MAS dimension, there are no known cultural studies to which any meaningful comparisons or correlations can be made. Peabody's (1985) study was more descriptive of national characteristics and Hofstede's MAS dimension is muddled with roles, equality, and masculine vs. feminine values and behaviors (as discussed earlier). Neither of these studies lends itself well to a direct comparison of the GLOBE dimension of Assertiveness.

Gender egalitarianism

For GLOBE, the fundamental problem that societies must solve, and therefore can be measured along this continuum, is that of role differentiation between men and women. In this regard, a society must not only decide how to allocate social roles between the genders, but also whether to emphasize and reward behaviors that are stereotypically masculine or feminine. When divvying up social roles between the genders, some societies prescribe differentiated roles while other societies prescribe overlapping or egalitarian roles (Emrich et al. 2004). *Gender Egalitarianism* is the degree to which a society minimizes the differences in roles between genders and promotes equality and the overlap of roles (Den Hartog 2004; Emrich et al. 2004; House and Javidan 2004).

The GLOBE authors contend that Gender Egalitarianism is grounded in societal values and beliefs (subjective culture) along with societal behaviors (objective culture). In so doing, GLOBE suggests that gender stereotypes and ideological roles are subjective culture aspects while discrimination and actual equality are objective traits. Stereotypes include the depicting of women as weak, gentle, meek, passive, nurturing, and emotional while men are viewed as aggressive, strong, active, achievement-oriented, and dominant.

These stereotypes occur as early as age five in both Western and non-Western societies. Gender roles refer to beliefs about role relationships between men and women. Traditional views believe men to be more ‘important’ than women and, therefore, men are more likely to be in dominant positions. Modern views believe men and women to be equals and women have greater access to higher education, the labor force, and political participation (Emrich et al. 2004). The GLOBE authors seem to present a much clearer picture of a construct that is meant to measure gender-based role differentiation compared to the ‘too inclusive’ nature of Hofstede’s original MAS dimension (Den Hartog 2004; Emrich et al. 2004).

Performance orientation

A unique dimension in the GLOBE study was Performance Orientation. GLOBE pins this dimension, in part, to the work of D. C. McClelland’s 1961 book *The Achieving Society* (House and Javidan 2004; Javidan 2004). In addition to McClelland, GLOBE and Hofstede both cite theoretical foundations for this dimension based on the theories of Max Weber (e.g. Protestant work ethic) and Confucius (e.g. work values) (Hofstede 2001; Javidan 2004). As noted by the GLOBE authors, the dimension of Performance Orientation does overlap Power Distance and Future Orientation; however, the end result is a dimension that contains unexplored variables which necessitates an added dimension to cultural studies (Carl et al. 2004; House et al. 2004; House and Javidan 2004).

Historically, Kong Fu Zu (later referred to as Confucius by Jesuit missionaries), was the first known philosopher to espouse principles of hard work, patience, perseverance, and the acquisition of knowledge and new skills. These values, over the course of two and a half millennia, have been instrumental in shaping the value systems and cultures of many Asian countries. The impact of Confucius’s teachings on cultural traits is only recently being explored (Hofstede 1980a, 2001; House et al. 2004; House and Javidan 2004; Javidan 2004; Trompenaars 1993a; Trompenaars and Hampden-Turner 1998).

Very similar to the teachings of Confucius is the theory of a ‘Protestant work ethic’ espoused by Max Weber in 1904. Weber’s theory drew contrasts between Protestantism and Catholicism and the influences that each had on economic prosperity within their respective cultures. Martin Luther, arguably the founder of Protestantism, introduced the idea that work is a calling and that doing worldly work did not detract from godly life. This philosophy was a major shift from the contemporary Catholic view that a constant focus on salvation required ‘good works’ on Earth and any earthly activity was a distraction from one’s salvation. This shift gave Protestants permission to pursue earthly goals in addition to spiritual goals and is the foundation of Weber’s Protestant work ethic (Javidan 2004).

As a result of a performance orientation in societies, Hofstede and Bond (1988) have correlated cultures based on Confucian values to such outcomes as the recent economic prosperity in Asia. Instrumental to this prosperity are values such as hard work, education, perseverance, and patience (Hofstede 2001). These findings occurred nearly 100 years after Weber’s theory which was grounded in a different philosophy (religion) and in a different region of the world. Yet both positions yielded conclusions similar in nature and centric to the notion that a performance orientation dimension does, indeed, exist and is in need of further exploration (Hofstede 2001; Javidan 2004; Weber 1904/1998). Placement on the Performance Orientation continuum identifies a society’s level of encouragement toward innovation, high standards, and performance improvement. To be clear, the GLOBE authors are quick to point out that although the performance orientation dimension does exist, the Weberian and Confucian descriptors may only be examples or special cases of a more universal achievement ethic (Javidan 2004).

Humane orientation

This is a dimension that, although unique to GLOBE’s model of cross-cultural research, is grounded in the theory of Kluckhohn and Strodtbeck’s (1961) *Basic Human Nature* and McClelland’s (1985) concept of the affiliative motive (House and Javidan 2004). The concept of Humane Orientation is defined as the degree to which society encourages and rewards acts of altruism, generosity, kindness, and caring. These acts and their underlying values are found in the way people treat one another and in socially institutionalized programs (Kabasakal and Bodur 2004).

Within Kluckhohn and Strodtbeck’s (1961) ‘basic human nature’ dimension, societies are said to view people as basically evil, basically good, or somewhere in between. In a society where individuals are seen as basically good, trust manifests itself with ‘handshake deals’ or ‘verbal agreements’.

A person's word is accepted as honorable. In a culture that views people as basically *evil*, there is a lack of trust and explicitness resounds. A society with a *mixed* orientation generally views people as good but recognizes that they are capable of serious acts which violate societal norms and values (Adler 2008; Kluckhohn and Strodtbeck 1961; Phatak et al. 2005).

Triandis (1995) and Schwartz (1992) confirmed the existence of values such as altruism, kindness, love, generosity, tolerance, understanding, protection, and benevolence. It is this set of values that GLOBE seeks to measure using the Humane Orientation dimension. These values are very similar to the values espoused by the Servant Leadership model originally offered by Robert Greenleaf (Dennis and Bocarnea 2005; Reinke 2004; Sendjaya and Sarros 2002; Spears 2004). One of the issues the GLOBE authors had with Hofstede's MAS dimension is that he attempted to measure femininity (the lower end of the MAS scale) by tapping these same values (Den Hartog 2004; Emrich et al. 2004; Kabasakal and Bodur 2004). GLOBE argues that Hofstede's MAS dimension included too many different and independent dimensions (House et al. 2004; Kabasakal and Bodur 2004). In this regard, there may be some values that were in the MAS dimension which the Assertiveness and Gender Egalitarianism dimensions do not contain.

Therefore and to provide a mechanism for measuring the scope and breadth of values originally contained in the MAS dimension, this study will include the Humane Orientation dimension. Like the Performance Orientation dimension, this dimension is also new and unique to GLOBE (notwithstanding the similarities described earlier). Unfortunately, there are no known cross-cultural studies which have included a dimension on Humane Orientation other than the aforementioned works of Triandis (1995, 2004b) and Schwartz (1992; 1999). Most of the other cited works in the GLOBE studies for this dimension are pinned to correlations to stress, quality of life, and the like. With this in mind, this study seeks to add to the literature by exploring the possibility of a Humane Orientation dimension in cross-cultural comparisons.

Literature Review Summary

The primary intent of this research is to validate the four 'new' GLOBE dimensions and measures. Guided by the general research objective, the literature review dealt with the actual new GLOBE dimensions used to measure, assess, and compare cultures. This review described four meaningful, intuitively independent, and significant GLOBE cultural dimensions.

3. Methodology

The prevailing approach to this research is from the positivistic approach and, therefore, all constructs, variables, and hypotheses are operationalized, surveyed, and measured quantitatively. However, the method of operationalizing and measuring 'culture' may not be universally accepted, even among the giants in the field (see for example the debate in its entirety in the *Journal of International Business Studies* (2006, v. 37)). In addition to that debate, some anthropologists strongly advocate that 'practices' (e.g. behaviors) are the central unit of cultural analysis rather than creeds, endorsements, or propositions (e.g. values) which commonly occur in cross-cultural questionnaires. Nevertheless, and while acknowledging these authors' opposing views, all of the dimensions contained in this study which were derived from GLOBE's (House et al. 2004) survey instruments shall be used.

Reliability & Validity

Reliability is concerned with the consistency and stability of the instrument being used in relation to that which is being measured. Hofstede (2001) states that the reliability of an instrument is implicitly tested if a construct has been deemed to be valid (p. 497). Similarly, Churchill (1992) specifically points out that if a measure is valid, it is surely reliable. The author of this study reserves further comment on the reliability and validity of the GLOBE scales until the analysis section.

Validity assesses the accuracy of a measure. Although there are various and important types of validity such as statistical conclusion validity, internal validity, and external validity, the two broad categories of subjective (content) validity and construct validity have been deemed to be particularly important in scientific research (Churchill 1979; Kerlinger 1986). For borrowed scales (as is the case for this research at hand), content validity is rather easy to assess. Minimum criteria such as validation by previous researchers in various contexts including different countries and different industries can be a sufficient determinant of content validity for borrowed scales (Hair et al. 2006; Malhotra 2007; Zikmund and Babin 2007). Construct validity of the survey instrument will also need to be assessed. Construct validity is made up of convergent and discriminant validity.

Convergent validity determines whether the items measuring a construct cluster together and form that single construct. Convergent validity is also provided by the extent to which it correlates highly with other methods designed to measure the same construct (Churchill 1979). Discriminant validity measures the degree to which a concept differs from the other concepts being measured in the instrument. Discriminant validity exists when a measure does not correlate with other measures that are not similar in theory (Churchill 1979; Kerlinger 1986). This will be further discussed in the analysis section.

Sampling

The overall intent of this research project is to validate the GLOBE scales for the four 'new' cultural dimensions. Based partially on convenience, it was decided that the target population would be retail managers which would constitute both the element and the sampling unit for the purposes of this research. Paying particular attention to the analyses conducted by Marsh et al. (1998) and MacCallum, et al. (2001) – it was determined that the minimum sample size for this study would be 150. This larger n will allow for the possibility of discarding indicators as part of exploratory factor analysis. Velicer and Fava (1994) concluded that lost indicators during exploratory factor analysis may result in erroneous conclusions when n is held constant. If it is necessary to discard items during exploratory factor analysis, there may only be three items in particular constructs. Using a rather robust and sophisticated Monte Carlo simulation, Marsh et al. (1998) demonstrated that a larger n will increase the chance of proper conclusions when there are fewer (less than four) items loading on any particular factor. For this study, a sample of managers in the U.S. was drawn for the purpose testing the validity of the chosen GLOBE dimensions and scales. All total, there were 512 emails sent to possible respondents resulting in 175 surveys completed. This equates to a very respectable 34.2% response rate. Comley (2000) observed a range of 15% to 29% for online surveys (Chung 2007).

4. Analysis

To guide the process of exploring the existence of factors in the datasets, a list of steps was developed from the collective literature. These steps will be followed for each of the constructs (cultural dimensions) in the dataset. The first three steps are necessary to determine whether factor analysis is appropriate.

- 1. Partial Correlations.** This is the amount of unexplained correlation within a set of variables and is represented in the anti-image correlation matrix in SPSS. If a factor does exist within the given variables, the partial correlations should be relatively small. Values beyond the ± 0.7 interval are considered inappropriate for factor analysis. Preferably, partial correlations should be within the interval of ± 0.5 (Field 2009; Hair et al. 2006).
- 2. Bartlett's test of sphericity.** This will determine whether the correlation between each of the survey items (that purportedly measure a single construct) is statistically significant. In other words, are the correlation coefficients of the actual survey items significantly different from zero in order for one to reasonably conclude that the items are, indeed, measuring a single latent variable? The χ^2 and significance values are keys to determine appropriateness of the dataset relative to this test (Field 2009; Hair et al. 2006).
- 3. Measure of Sampling Adequacy (MSA).** A common method of measuring sampling adequacy is to use the KMO test embedded in most statistical analysis software packages. This test represents the ratio of squared actual correlation between variables to the squared partial correlation between variables. The possible values range from zero (0) to one (1). Values above 0.5 are considered 'acceptable'; values above 0.7 'good'; values above 0.8; 'great' and values above 0.9 'superb'. SPSS provides the overall KMO value for all variables selected. Additionally, the MSA values for individual variables are the diagonals of the anti-image correlation matrix (Field 2009; Hair et al. 2006).

After performing steps 1, 2, and 3, it will be determined whether any of the variables within a construct are worthy of factor analysis. The remaining variables, if any, are then subjected to the remaining steps of exploratory factor analysis.

- 4. Principle Components Analysis (PCA).** A step in factor analysis is to determine the method of extraction. Principle Components Analysis was chosen as the literature supports this extraction method as the most common, it is a psychometrically sound procedure, and it is conceptually less complex than other methods of factor analysis. It is acknowledged that PCA is not truly 'factor analysis' but has been treated as such in the literature (Field 2009; Hair et al. 2006). Kaiser's suggestion of 'Eigenvalues > 1' was also employed when assessing the number of factors extracted (Field 2009; Hair et al. 2003; Hair et al. 2006).

5. **Factor Loadings.** Given the size of the sample, factor loadings of 0.45 will be used to determine the retention of each survey item (variable). This threshold was selected as the minimum required to ensure statistical significance given that the sample exceeded 150. The significance of factor loadings is dependent on the sample size. As reported by Field (2009), Stevens suggests that samples of 100 requires factor loadings of 0.512 in order to be considered significant while samples of 200 require factor loadings of 0.364 (Field 2009, p. 644). So the range of factor loadings for the sample at hand (175) would be somewhere between 0.364 and 0.512. However, Hair et al. (2006, p. 128) is even more specific by offering that samples above 150 but below 200 would require factor loadings of 0.45 in order to be significant.
6. **Communality.** This is a measure of the amount of shared (common) variance in a particular variable. The value of the communality is the amount of variance for each variable that can be explained by the extracted factor(s). Although there are no real 'rules-of-thumb' to guide researchers, communalities of each variable should be considered in conjunction with the factor loadings when determining the retention of variables in a factor solution (Field 2009; Hair et al. 2006).

Steps 4, 5, and 6 will determine whether variables within a given construct should be eliminated. Once these steps are exhausted for each of the eight constructs within each dataset, a final step (Step 7) will be used to determine the final factor loadings within each group of constructs. Step 7 cannot be completed during the initial phase of exploratory factor analysis because only one construct at a time is being explored. Rotation requires at least two factors.

7. **Rotation Method.** When choosing a rotation method, one must consider whether there will be correlation between any of the factors. An oblique rotational method is more flexible than the orthogonal rotation methods because the rotated factor axes need not be held constant at a 90° right angle. Removing the limitation that the axes remain constant at 90° allows correlated factors to be identified (Field 2009; Hair et al. 2006). An oblique rotation method was preferred due to the expected correlation between some of the constructs. For example, it is expected that Assertiveness will positively correlate with Performance Orientation (House et al. 2004) as the GLOBE authors themselves witnessed positive correlation between these two constructs. In this regard, 'direct oblimin' was selected with a delta of zero (0). A factor loading threshold of 0.45 was used as a cutoff to determine the retention of each variable (for discussion about this 0.45 factor loading threshold, see #5 above).

Exploratory Factor Analysis

Each GLOBE dimension was analyzed separately to determine the structure of the data supposedly measuring that single latent variable. After each of the four constructs was analyzed separately, the collective GLOBE items were analyzed to determine the final exploratory factor structure of the dataset. Using the remaining GLOBE variables, an exploratory factor analysis was run to test the structure of the data for these variables.

Gender Egalitarianism (Gen)

The Gen variables were collectively tested for sphericity and sampling adequacy. Bartlett's test of sphericity was deemed significant at $p < 0.001$ ($\chi^2 = 180.3$) and the KMO test for sampling adequacy was considered 'acceptable' at 0.744 for the collective set of five variables. At the individual item level, the anti-image correlation matrix revealed no off-diagonal partial correlations above the threshold of 0.5. The diagonals of the anti-image indicate partial correlations above 0.5 which indicates acceptable levels of MSA for each of the variables. Principle factor analysis using Kaiser's Eigenvalue threshold of 1.0 resulted in a single factor being extracted. This single factor explained 48.7% of the variance with an Eigenvalue of 2.45. All factor loadings in SPSS Component Matrix were above the 0.45 threshold. It was decided that all five Gen variables will be retained.

Aggressiveness (Agg)

All four variables in the Agg dimension were tested for sphericity and sampling adequacy. Bartlett's test of sphericity was deemed significant at $p < 0.001$ ($\chi^2 = 183.3$) and the KMO test for sampling adequacy was considered 'acceptable' at 0.737 for the collective set of four variables. At the individual item level, the anti-image correlation matrix revealed no off-diagonal partial correlations above the threshold of 0.5 indicating no significant partial correlations between variables. The diagonals of the anti-image indicate partial correlations above 0.5 which indicates acceptable levels of MSA for each of the four variables. This indicates that all four of the Agg variables are conducive to factor analysis. Principle factor analysis using Kaiser's Eigenvalue threshold of 1.0 resulted in a single factor being extracted from the four Agg variables.

This single factor explained 58.3% of the variance with an Eigenvalue of 2.33. All factor loadings in SPSS Component Matrix were above the 0.45 threshold; therefore, all four Agg variables will be retained.

Performance Orientation (PO)

The PO variables were collectively tested for sphericity and sampling adequacy. Bartlett's test of sphericity was deemed significant at $p < 0.001$ ($\chi^2 = 34.9$) and the KMO test for sampling adequacy was considered 'acceptable' at 0.626 for the collective set of four variables. At the individual item level, the anti-image correlation matrix revealed no off-diagonal partial correlations above the threshold of 0.5. The diagonals of the anti-image indicate partial correlations above 0.5 which indicates acceptable levels of MSA for each of the variables. Principle factor analysis using Kaiser's Eigenvalue threshold of 1.0 resulted in a single factor being extracted. This single factor explained 39.4% of the variance with an Eigenvalue of 1.58. All factor loadings in SPSS Component Matrix were above the 0.45 threshold. It was decided that all PO variables will be retained.

Humane Orientation (HO)

The four HO variables were collectively tested for sphericity and sampling adequacy. Bartlett's test of sphericity was deemed significant at $p < 0.001$ ($\chi^2 = 184.7$) and the KMO test for sampling adequacy was considered 'acceptable' at 0.728 for the collective set of four variables. At the individual item level, the anti-image correlation matrix revealed one off-diagonal partial correlation above the threshold of 0.5. This occurred between the variables HO1 and HO2 with a partial correlation of -0.509 which was just over the threshold of 0.50. No other off-diagonal partial correlations were problematic. The diagonals of the anti-image indicate partial correlations above 0.5 which indicates acceptable levels of MSA for each of the four variables. At this point it was decided to retain all four variables and proceed with the factor analysis.

Principle factor analysis using Kaiser's Eigenvalue threshold of 1.0 resulted in a single factor being extracted. This single factor explained 57.9% of the variance with an Eigenvalue of 2.32. All factor loadings in SPSS Component Matrix were above the 0.45 threshold. It was decided that all four HO variables will be retained.

GLOBE (All)

Using the all of the GLOBE variables, an exploratory factor analysis was run to test the structure of the data for these variables. Bartlett's test of sphericity was deemed significant at $p < 0.001$ ($\chi^2 = 979.1$) and the KMO test for sampling adequacy was considered 'acceptable' at 0.760 for the collective set of variables. At the individual item level, the anti-image correlation matrix revealed no off-diagonal partial correlations above the threshold of 0.5 indicating no significant partial correlations between variables. The diagonals of the anti-image matrix were above 0.5 in all variables.

Principle factor analysis using Kaiser's Eigenvalue threshold of 1.0 resulted in four factors being extracted (when four were expected). Collectively, these factors accounted for 55% of the variance. All factor loadings below 0.45 were suppressed in SPSS. Three variables were not loading on any of the four factors (Agg2, Gen2, and Gen3). Upon inspection of the communalities, it was decided to eliminate only Gen2, with a communality of 0.377. It has been suggested that removal of variables from a parametric statistical analysis should be done on an iterative and one-at-a-time basis (Harnett and Horrell 1998). Therefore, the single variable Gen2 was removed and the factor analysis was rerun.

The resulting run resulted in Agg2 and Gen3 continuing to not load on any factor. It was therefore decided to eliminate Agg2 due to the lower communality of 0.374. Gen3 continued to not load on a factor so a final analysis was ran without Agg2, Gen2, and Gen3. In this final run, Bartlett's test of sphericity was deemed significant at $p < 0.001$ ($\chi^2 = 788.2$) and the KMO test for sampling adequacy was considered 'acceptable' at 0.727 for the collective set of variables.

At the individual item level, the anti-image correlation matrix revealed no off-diagonal partial correlations above the threshold of 0.5 indicating no significant partial correlations between variables. The diagonals of the anti-image matrix were above 0.5 in all of the remaining variables. The scree plot indicated inflexion at the fourth factor so it would seem reasonable that there are, indeed, four distinct factors. The rotated pattern matrix is provided in the table below and indicates the clear presence of four factors matching the four GLOBE constructs very well. The extracted four factors accounted for 59.5% of the total variance.

Table 2: GLOBE All Pattern Matrix

	Component (a)			
	1	2	3	4
Agg1	-.840			
Agg3	-.753			
Agg4	-.750			
HO2		-.804		
HO3		-.790		
HO1		-.789		
HO4		-.559		
PO3			.699	
PO2			.596	
PO4			.575	
Gen1				.799
Gen4				.702
Gen5				.507

Extraction Method: Principal Component Analysis.

Rotation Method: Oblimin with Kaiser Normalization.

(a) Rotation converged in 17 iterations.

It was noted that PO1 did not load at the 0.45 threshold so it was eliminated from the above rotated matrix. The remaining GLOBE variables appear to be representative of the four extracted factors and will be retained during the next phases of the analysis. Based on the above analyses, it was decided to proceed with confirmatory analysis of the GLOBE items.

Confirmatory Analysis

The method of confirmatory analysis for this study will be to measure construct validity by first assessing convergent validity and then creating summated scales to better analyze discriminant validity for the indicators and constructs used in this study. To begin, convergent validity will be assessed by analyzing the correlations between each of the indicators and the other indicators contained in this study.

Convergent validity

Suggestions from Hair et al. (2006) were followed. Specifically, factor loadings should be 0.50 or higher but ideally will be 0.7 or higher; total variance extracted by the common factor will be targeted to exceed 0.5 which will indicate that more than 50% of the variance is explained by the observed variables; and Cronbach's alpha coefficients will be assessed for a threshold exceeding 0.6 (Hair et al. 2006, p. 777).

Gen

During the exploratory factor analysis for the Gen construct, Gen2 and Gen3 were identified as problematic indicators. During the test for convergent validity, none of the Gen variables manifest as problematic. Nevertheless, it was decided to attempt to create a more parsimonious set of measures by testing the subsequent removal of Gen2 and Gen3. Attention was also paid to the total variance extracted and the coefficient alpha to determine which of the subsequent CFA runs would result in the strongest representation of the latent construct. After several tests of this construct were run, the remaining set of indicators was limited to Gen1, Gen4, and Gen5. The resulting alpha score was 0.605 which is above the minimum threshold of 0.6. The total extracted variance was 61.2% and the three remaining factor loadings were 0.810, 0.756, and 0.779 for Gen1, Gen4, and Gen5 respectively. These are above the 0.7 threshold deemed to be ideal by Hair et al. (2006).

Agg

During the exploratory factor analysis for the Agg construct, Agg2 was removed from this construct. During this convergent validity test, there was strong argument that all four Agg variables converge nicely on a single factor. However, parsimony is also desirous (Field 2009; Hair et al. 2006); therefore, a second analysis was run sans Agg2. As a result of the second CFA after Agg2 was removed, the total variance extracted increased from 58.3% to 69.9% and the Cronbach Alpha increased from 0.754 to 0.777. Agg1, Agg3, and Agg4 converge nicely on a single parsimonious model.

PO

During the exploratory factor analysis for the PO construct, PO1 was identified as a problematic indicator. Although all factor loadings are above the 0.5 threshold, the total extracted variance and the Cronbach alpha score are both below the desired thresholds (39.4% and 0.462 respectively). This construct was tested again after removing PO1. As a result, the extracted variance increased to 47.4% with factor loadings of 0.603, 0.707, and 0.748 for the three remaining PO variables of PO2, PO3, and PO4, respectively. The Cronbach alpha coefficient fell slightly to 0.417. When applying the analysis framework suggested by Hair et al (2006), there appears to be a lack of convergence of the remaining three PO variables on a single construct. Although the test for discriminant validity will proceed with the three remaining PO variables, caution is strongly suggested when it comes to any interpretation due to the marginal EFA and CFA results.

HO

During the exploratory factor analysis for the HO construct, none of the four indicators were removed. Likewise, during this test of convergent validity, none of the four indicators necessitate removal. However, researchers must also balance the desire for parsimony when creating summated scales. Therefore, given the relative low factor loading (0.546) of HO4, this construct was tested again after removing HO4. As a result, the extracted variance increased from 57.9% to 70.8% and the Cronbach alpha coefficient also improved from 0.731 to 0.790.

Convergent validity conclusions

As a result of the confirmatory analysis, Table 3 summarizes the findings for each construct, the associated indicators, and the applicable comments.

Table 3: Confirmatory Analysis Summary

Construct	Indicator	Comments
GLOBE: Aggressiveness	Agg1	The three indicators passed EFA and CFA with no apparent reservations.
	Agg3	
	Agg4	
GLOBE: Humane Orientation	HO1	The three indicators passed EFA and CFA with no apparent reservations.
	HO2	
	HO3	
GLOBE: Gender Egalitarianism	Gen1	The three indicators passed EFA and CFA with no apparent reservations.
	Gen4	
	Gen5	
GLOBE: Performance Orientation	PO2	The CFA analysis yielded a low Cronbach Alpha score of 0.417 (1) and total extracted variance of 47.4% (2).
	PO3	
	PO4	

(1) Although these scales resulted in low Cronbach Alphas, this is nothing new as cross-cultural studies have, in the past, yielded low alphas (Hofstede 2001; House et al. 2004).

(2) This means there is more variance attributed to total measurement error than to the indicators.

The confirmatory analysis conducted above statistically support the theoretical existence of the four new GLOBE constructs.

Discriminant Validity

In this section discussion will include creating the actual summated scales and testing *discriminant* validity of the resulting summated scales. Coupled with convergent validity tested previously, discriminant validity is another testing in the effort to illustrate overall construct validity. Although reliability is normally discussed as part of the creation of summated scales, reliability of the scales was previously discussed during confirmatory analysis. Each of the constructs in the summated scales was analyzed for discriminant validity. From Table 4, only the correlations that were significant at p<0.05 will be discussed. Any insignificant correlations were suppressed and not discussed. Table 4 illustrates the correlations based solely on EFA and CFA development of the scales.

Table 4: Correlation Coefficients of EFA and CFA Constructs

	AvgAgg	AvgHO	AvgPO	AvgGen
AvgAgg	1			
AvgHO	-.213(**)	1		
AvgPO	.305(**)	-	1	
AvgGen	-.387(**)	.225(**)	-	1

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

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

Agg to HO

There exists a strongly significant negative correlation ($r = -0.213$, $p < 0.01$) between the Aggressiveness summated scaled and the Humane Orientation summated scale. This negative relationship is supported in the GLOBE literature whereby societies that score lower on the Aggressiveness scale tend to have sympathy for the weak, value people, have warm relationships, stress equality (House et al. 2004, p. 405). The GLOBE authors experienced a strongly significant negative correlation between societal *practices* of Aggressiveness and *practices* of Humane Orientation. Although slightly different from the *values* constructs, it is not unprecedented that these concepts are negatively correlated. While acknowledging the correlation, it is believed that these two constructs measure different aspects of societal culture (House et al. 2004). For support of this acknowledgement, please see the above factor loading table.

Agg to PO

There exists a strongly significant positive correlation ($r = 0.305$, $p < 0.01$) between the Aggressiveness summated scaled and the Performance Orientation summated scale. This positive correlation is supported in the GLOBE literature whereby societies that score higher on performance orientation tend to value and reward assertiveness, individual achievement, tasks (over people), and directness (House et al. 2004, p. 245). It is a reasonable outcome that these two constructs are correlated. While acknowledging the correlation, it is believed that these two constructs measure different aspects of societal culture (House et al. 2004).

Agg to Gen

There exists a strongly significant negative correlation ($r = -0.387$, $p < 0.01$) between the Aggressiveness summated scaled and the Gender Egalitarianism summated scale. This negative relationship is similar to the negative correlation reported by GLOBE in their findings (House et al. 2004, p. 415). There is strong theoretical argument to support that Hofstede's MAS dimension is deservedly treated as two separate constructs within the GLOBE framework. The reader is referred back to literature review for a detailed discussion concerning the bifurcation of the MAS construct.

HO to Gen

There exists a strongly significant positive correlation ($r = 0.225$, $p < 0.01$) between GLOBE's Humane Orientation summated scaled and GLOBE's Gender Egalitarianism summated scale. This relationship is supported by the GLOBE findings whereby highly humane societies tend to emphasize equality, tenderness, and sensitivity toward discrimination – all of which are egalitarianistic (House et al. 2004, p. 570).

Summary of discriminant validity

For the most part, the correlations that existed between the summated scales could be readily and easily explained by theory or other observations from prior researchers. It is a logical conclusion – supported by the collective arguments presented above – that discriminant validity exists within all constructs. That is to say that the four new GLOBE dimensions are, indeed, measuring different underlying elements of culture.

5. Conclusions

The main objective of the functions and activities described above was to test the validity of four of the GLOBE constructs. This included the task of collecting, preparing, and analyzing the data in order to assess various categories of reliability and validity. The approach that was followed to conduct this analysis was given by Churchill (1992).

In this regard, key decisions about issues concerning factor analyses were explored: (i) Should factor analysis be applied?; (ii) Should the factor analysis be carried out using the variable-by-variable or object-by-object correlation matrix?; (iii) Which factor model should be used?; (iv) How many factors [if any] should be extracted?; (v) Should the initial solution be rotated, and if so, using what method of rotation? Hair et al. (2006) describe a factor analysis as exploring and defining the underlying structure among the variables of analyses. This included construct validity for each dimension outlined in this study along with individual factor analyses for the four constructs. As part of the analysis of the data for this study, the validity of each construct was tested. Based on the research presented herein, there appears to be credence of the existence of the four 'new' GLOBE dimensions of Gender Egalitarianism, Assertiveness, Performance Orientation, and Humane Orientation.

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