

APPLICATION AND VALIDATION OF HETEROGRAM ANALYSIS ON INDIVIDUALISM-COLLECTIVISM DATA ACROSS THREE COUNTRIES

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Abstract

The prevalent method to analyze data from several groups of individuals is to define some ad hoc boundaries of individuals—for example geographic, ethnic or gender boundaries and then compare statistical means and deviations between groups. This method assumes homogeneity within each ad hoc group and treats differences among individuals in each group as subgroup variations.

Instead of imposing ad-hoc boundaries, we used a new method “heterogram analysis” (Maruyama, 1999) that looks for response data-generated grouping of individuals and the meaningfulness of each emerging group. This approach was applied to individual-level individualism-collectivism data from three countries. The results showed five individual types that cut across traditional geographic, ethnic and gender boundaries. These types were validated by two other measures. Implications of findings are discussed.

INTRODUCTION

This study examines distribution of individually held values in three countries from a new angle. Instead of the traditional approach which assumes that value differences reside at the country level, this study uses an approach that is similar to heterogram analysis (Maruyama, 1995, 1999) to find groups of individuals in terms of similarity of values regardless of geographic, ethnic, or gender boundaries. This approach identifies groups, each of which consists of individuals with similar

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values, and then tests the extent to which the value differences are significant between groups. The approach helps to discover: (1) the extent to which people of different countries have similar values; and (2) the extent to which people of the same country have different values. Maruyama (1995) referred to individual similarities across traditional cultural/country boundaries as “transculturality of individual types.” This study seeks to determine the extent to which the IC value orientation may also cut across traditional geographic, ethnic and gender boundaries.

The procedure for heterogram analysis (Maruyama, 1999) is rather simple and straightforward: (1) Make a raw-score space of N dimensions. If the data are on questionnaires, then each question can be regarded as one dimension; (2) Place all individuals from all groups together in this raw-score space regardless of any ad hoc group boundaries. Each individual becomes a point in this raw-score space; (3) Look for clusters of individuals. If a cluster is found which contains individuals from many ad hoc groups, it defines a transgroup individual type; (4) If no cluster is found, it may be due to either (4a) continuous distribution of points, or (4b) thin distribution because of too many dimensions. For the former, divide the space into sections and examine whether any section is a transgroup. For the latter, try a small number of key dimensions. Do not aggregate dimensions because such aggregation reduces the distinguishing power of each dimension.

In order to illustrate how heterogram analysis yields new insights, we apply this analysis to a dataset of individualism-collectivism data and validated the results by two other measures. First, we review briefly the literature on IC that used conventional cross-cultural research methodology. Then we present our results using heterogram analysis on our IC data that were collected from three countries—Hong Kong, Singapore and USA.

Finally, discussion of findings and implications of differences and similarities amongst these groups along with direction for future research are examined in the paper.

LITERATURE REVIEW

Individualism-Collectivism

Cross-cultural research into differences between countries has been an area

of research interest in a wide range of research literature, including anthropology, sociology, psychology and more recently business and management (Bond 1996, Earley & Erez, 1997; Hofstede, 2001; Oyserman, et. al., 2002; Sosik & Jung, 2002; Triandis, et. al., 1988; Wagner & Moch, 1986). Based on research over the last 25 years, few would argue that the cultural orientation of individualism-collectivism (IC) has attracted more attention than any of the other value orientations in cross-cultural research. While differences in IC between countries have existed for a long time, it was Hofstede (1980)'s study of cross-cultural differences that raised the importance of cultural orientations, such as individualism-collectivism, power-distance, uncertainty-avoidance and masculinity-femininity. Since then, many other researchers have added to the knowledge of these and other values (Bond, 1996; Earley & Erez, 1997; Triandis, 1995). According to Triandis (1995), IC has four important attributes that differentiate those who lean towards individualism versus collectivism: (1) Individualists focus on independence and personal aspects of self in contrast to collectivists who focus on interdependence among members of a group. (2) Individualists are concerned with personal goals whereas collectivists are concerned with group goals. (3) Individualists conduct social interactions from the perspective of personal rights and contracts, whereas collectivists' social interactions are rooted in norms, obligations, and duties to the group. (4) Individualists view relationships as rational exchanges whereas collectivists emphasize the communality of relationships, even when this may be a personal disadvantage to an individual. Such differences between individualists and collectivists highlight the tension that may be faced by people with different value orientations when they work together for a common end since both groups are likely to have different assumptions on interactions and consequent differences in behaviors.

Apart from identifying important attributes that differentiate Individualism from Collectivism, there were many empirical studies that revealed different underlying facets of IC (Hofstede, 2001; Triandis, et. al., 1988; Wagner, 1995; Wagner & Moch, 1986). An attempt at integrating the multi-faceted nature of IC that arose from various empirical studies was presented by Wagner (1995) in his exploratory factor analytic study of different IC works. His results revealed 5 IC factors across twenty measurement items. These were labeled by Hwang, Francesco & Kessler (2003) as IC1 (Stand Alone, reflecting a belief in individual independence and self-reliance), IC2 (Win All, reflecting an all-consuming

inclination to get ahead of others in competitive situations), IC3 (Group Preference, reflecting a preference to work with others in groups), IC4 (Sacrifice, acknowledging need for personal sacrifices in group situations), and IC5 (Individual Thinking, reflecting a preference for individual beliefs even in group situations). According to Hwang, et al., (2003), Stand Alone, Win All, and Individual Thinking were likely to be individualism factors, while Group Preference was clearly a collectivism factor. There was more uncertainty on Sacrifice although it leaned towards a collectivism factor because of its emphasis on individual sacrifices in a group situation.

In applying IC to explain social behaviors, the traditional approach is to test for variations in IC between countries and then examine possible behavioral differences between people of these countries (Bond, 1996; Hofstede, 2001; Triandis, 1995). This approach is based on the assumption that mean value differences between countries, as defined by country boundaries are at the root of different behaviors. Some research from this perspective have uncovered many interesting behaviors. For example, persons with a high individualism orientation tend to engage in social loafing behaviors when placed in group situations. However, such “individualists” would dramatically reduce “social loafing” behaviors when they perceive that others could trace personal accountability for individual effort in these situations (Earley, 1989). In addition, individualists tend to perform better when they are working alone than in groups while collectivists tend to work better with ingroups than outgroups (Earley, 1993). In more recent studies, differences in individualism and collectivism inclinations were also found to affect the extent managers would involve individuals versus groups in participation and decision making activities (Sagie & Avcan, 2003). Individualism value has also been found to correlate with reported feelings of functional heterogeneity and group potency (Sosik & Jung, 2002). In contrast to individualists, collectivists see themselves as most effective when working with an in-group as reflected in higher group- and self-efficacy scores. In contrast, individualists had higher self-efficacy expectations when they were working alone (Earley, 1993).

Differences in behaviors between individualism and collectivism inclined persons support Olson’s (1971) and Wagner’s (1995) arguments that individualists’ self-interest could make them less cooperative in interactive work. Despite this unique characteristic of individualists, the fact that they were willing

to reduce social loafing behaviors and act in a socially acceptable way to others, even if it is for self interest, does reflect some consideration of collectivism norms—at least basic needs to cooperate with others for survival in the environment. This basic need to cooperate and be accepted by others, regardless of overall IC orientation has been shown to be present in people across different cultures where politeness in use of language in order to gain acceptance has been shown to be common across countries (Brown & Levinson, 1987; Goffman, 1967; Holtgraves & Yang, 1990; Lerner, 1996). The presence of such transcultural underlying orientations regardless of country boundaries is an area of research that has intrigued some researchers (Maruyama, 1995; Voronov & Singer, 2002) since it runs counter to the dominant research approach in cross-cultural research where the emphasis is on country level differences across a wide range of cross-cultural value inclinations.

Similarities across countries have also been recognized by some cross-cultural researchers as they have acknowledged that even in a country with a dominant IC orientation, such as individualism in the US, there could be groups that lean towards a different orientation, such as collectivism (Oyserman, et.,al., 2002; Singelis, Triandis, Bhawuk, & Gelfand, 1995; Triandis, 1995). However, few researchers have directed their attention to this phenomenon except some who have just begun to pay attention in recent years (see Oyserman, et. al., 2002; Voronov & Singer, 2002). Even fewer have examined any empirical data on the extent of similarity across countries by rigorously testing for this possibility and its possible consequences. Any study that seeks to examine similarity across countries is in fact looking for the natural boundaries of cultural value orientations where individuals who are more similar to each other along some value dimension(s) should fall within the same group regardless of their countries of origin. In contrast, individuals who are in different groups should be more different from each other, and again regardless of their country of origin. The researcher will have to let the data speak for itself and determine its own boundaries. In so doing, research respondents will be able to draw their own cultural value boundaries based on greater similarity of people within each cultural group and enhanced contrast between groups. Such an approach should reduce “averaging effects” on cultural value orientations that are based on country boundaries but instead reveal naturally underlying cultural groups that have somewhat different values from those of the dominant majority. Results from such an analysis could help researchers understand

how some management practices are better assimilated by certain groups but not others, regardless of country or regional boundaries.

In the business context, instead of assuming employees are likely to be different across country boundaries, there is also good reason not to make such an assumption since the spread of Western management knowledge and approaches with their underlying values to a majority of countries in the world—either via business education or multinational organization practices, have made it more difficult to support the view that country boundaries could be determinants of management differences (Sagie & Avcan, 2003; Vornov & Singer, 2002).

Of greater importance is the need for organizational researchers to stay relevant to their research constituents. If how such cultural value boundaries are drawn have not been clearly thought through, then the practice of assuming country level differences and consequently comparing at the country level without a clear reason for it could miss within country differences or across country similarities in cultural values that impact on organizational behaviors and practices. In calling attention to the need to rethink how cultural value boundaries are drawn, the first step is to consider the importance of collecting and understanding cross-cultural value data at the lowest unit of analysis—the individual level. Only when individual level data is available would it be possible to proceed to the next step of grouping like-minded individuals together to form natural “value orientation” groups, before finally comparing differences between groups, regardless of geographical or other assumed boundaries.

Heterogram Analysis

An approach towards letting the data speak for themselves and so reveal individuals’ own cognitive/cogitative boundaries could be borrowed from the heterogram analysis used by Maruyama (1999) in his research on individual types—an approach that looked for clusters of individuals across cultural, geographical, social, gender and other ad hoc boundaries.

Arising from his research over the last 40 years, Maruyama (1980, 1985) identified a range of Individual Types, with the four most common Types being H-Type, I-Type, S-Type and G-Type. In the social activity area, the H-Type prefers hierarchically organized activities and emphasizes the importance of in-group homogeneity, conformity and cohesion. In contrast, the I-Type prefers to

avoid social obligations and commitment, and emphasizes caprice as opposed to scheduling and planning. For the S-Type, it is the importance of mutual dependency, sharing of intimate concerns, perpetuation of familiar affect relations, and preservation of harmony and coziness that are important to them. Finally, the G-Type likes to make new contacts, and generates new purposes and activities through interaction, exploration and innovation. In the work area, the H-Type prefers to classify jobs into categories and sub-categories with principles of management applicable for everyone in all countries. For I-Type individuals, a firm is viewed as an aggregate of individuals who tend to think and act independently. When their interests coincide, they work together. For S-Type individuals, a firm is viewed as one that consists of heterogeneous individuals who interact for mutual advantage. Members of a group know one another's special talents and adjust themselves to one another. Belonging to a group does not mean self-sacrifice or subordination. For G-Type, individuals interact for mutual benefit. The interactions generate new diversity, new patterns and new harmony. Groups are less permanent than with S-Types. However, individuals who once worked together keep one another in mind for possible future cooperation. His finding was that all these Types exist in each culture and thus he called attention to the importance of transculturality of these Types. As these Types were also represented in both gender groups, he also pointed to their pangenderic influence.

While Maruyama (1995) used pictorial tests to elicit individual responses that were then used to identify clusters of individuals regardless of ad hoc boundaries such as country, social group, and gender, the underlying principle that individual responses to the same stimuli could be used to identify transboundary clusters of individuals is applicable to other forms of stimulus-response data, even if they do not involve a pictorial stimuli-response format.

The application of a purely empirical classification approach, such as that used by Maruyama (1995), is especially useful when examining cross-cultural differences where the objective is to determine how one cultural group differs from another. Traditionally, country boundaries have been used as a proxy for cultural boundary, and research using this approach have revealed interesting findings on how such boundaries may explain social behaviors (Earley & Erez, 1997; Lam, Schaubroeck, & Aryee, 2002; Sosik & Jung, 2002). However,

there were also recent studies that raised concerns on examining cultural value differences that were rooted in country boundaries (Oyserman, et. al., 2002; Voronov & Singer, 2002). Arising from these concerns, it is timely to adopt an approach that does not assume a geographic or ethnic value boundary. By adopting Maruyama (1980)'s approach of relating some seemingly unrelated aspects of each individual's life such as social interaction pattern, spatial composition of furniture, decision process, aesthetic preferences, methods of learning, ethical principles, organization of knowledge, etc.. which are expressions of the same underlying cognitive/cogitative structure, we can re-orient our research. This concern for greater sensitivity to underlying similarities and differences is especially important in cross-cultural research where researchers have found some basic desires, such as the need to be accepted by others, to cut across traditional country boundaries (Brown & Levinson, 1987; Goffman, 1967; Holtgraves & Yang, 1990; Lerner, 1996). Such similarities would not have revealed themselves if researchers were solely focused on between country-level differences. In addition, since cross cultural researchers have already admitted the possibility that even within a country that has a dominant IC orientation, such as individualism in the US, there could be variations in IC differences in the population (Oyserman, 2002; Singelis, et. al., 1995; Triandis, 1995), there is therefore good reason not to assume country boundaries as the sole explanation of cultural values whether within or across such geographical boundaries. Consequently, the objective of this study is to test the hypothesis that similarities in individualism and collectivism could extend beyond country boundaries. This will be carried out by using an analytical approach that is similar to that of Maruyama (1995, 1999) by letting individual responses instead of country boundaries to be the measure for group classification. Any such emerging groups would then be tested for differences across groups. Since the aim of this paper is to test the hypothesis that similarities in IC extends beyond country boundaries, Wagner (1995) IC measures of Stand Alone, Win All, Individual Thinking, Group Preference, and Sacrifice will be used as stimuli to identify respondent inclinations on IC instead of Maruyama (1995) Type pictograms. Therefore, hypothesis for this study is:

H1: Individuals across countries could be more similar to each other than different along the five IC dimensions of Stand Alone, Win All, Individual Thinking, Group Preference, and Sacrifice.

In this study, the stimuli are a set of IC scale items that measured different facets of individualism and collectivism values. The degree of similarity amongst individuals is calculated from the Euclidean distance of item responses amongst them. The shorter the Euclidean distance of each individual's set of responses is from another's set of responses, the greater the likelihood that these individuals would be placed within the same cluster group. In addition to calculating distance measures, the analytical approach to determine each individual's inclusion in a cluster has also to be considered here. Some common analytical approaches include single linkage, complete linkage, average linkage, Ward's method and others. As Ward's clustering method seeks to minimize response variance within clusters and is the most widely used approach in the social sciences (Aldenderfer, & Blashfield, 1984:43), it is the preferred method for this study of a social science nature.

Once the clusters have been formed, individuals who are more similar to one another should be in the same cluster while those who are more different from one another should be in different clusters. In order to determine how emerging clusters differ along the IC measures and the meaningfulness and possible interpretation of these differences, an ANOVA test of difference between clusters on the IC measurement scales was carried out in this study. While the authors are conscious of criticisms in using the same clustering measures to test for significant differences between clusters (Hartigan, 1979), the objective of this step is not to validate discriminability between clusters by the same clustering measure but rather to try to interpret emerging clusters along their IC differences.

In order to address the need to validate differences between emerging clusters, another ANOVA test was carried out through two new measures: desire for "face gain" (mianzi-gain) and fear of "face loss" (mianzi-loss). This approach of using variables that were not utilized in generating the initial cluster solution to validate emerging cluster solution is supported by Filsinger, Faulkner & Warland (1979) and other researchers who have adopted a similar approach to validate their cluster results (Aldenderfer, & Blashfield, 1984: 65).

The choice of "face gain" and "face loss" dimensions to validate possible emerging clusters is because of research that have shown "face" to be similarly present in both individualistic and collectivistic societies in the East and West (Brown & Levinson, 1987; Holtgraves & Yang, 1990). For example, in comparing

American and Chinese societies, Hsu (1981) suggested that “The Chinese concepts of face and of propriety, and the American sensitivity to prestige and superiority are all familiar expressions of the same need” (p. 110). Earley (1997) argued that with respect to “Face”, cultural dimensions such as IC could provide a context that shaped a predisposition to respond to the environment in specific ways. A study on “Face” attitudes between Hong Kong and U. S. journalistic sports writings revealed different “Face” concerns (Hallahan, Lee, & Herzog, 1997). U.S. sportswriters were found to focus on “Face” gaining situations, by making strong internal attributions of success—a sign of desire for “face gain.” However, their counterparts in Hong Kong tended to focus on explaining away “Face” losing situations by attributing them to external causes – a sign of fear of “face loss.” When we consider the more collectivistic Hong Kong environment in comparison to the more individualistic US environment, along with arguments on how “Face” concerns may be rooted in IC differences (Earley, 1997), there is ground to believe that IC should correlate with differences in “Face” concerns.

Arising from the above argument, if there are significant differences along IC measurements between any two emerging clusters in this study, there should also be differences in desire for “face gain” and fear of “face loss” measurements between the clusters. Therefore, the desire for “face gain” and fear of “face loss” measures should be useful in validating emerging cluster differences.

If hypothesis 1 is correct, the results from this study should show that individuals from different geographic and gender groups may cluster together regardless of the dominant IC orientation of any single country, thus proving that country boundaries that are currently used to categorize and compare IC differences are inadequate in considering individual level IC variations that transcend those country boundaries.

METHOD

Subjects

The sample for this study came from the U.S. (n=253), Hong Kong (n=266), and Singapore (n=131). All subjects were undergraduate business students ranging in age from 18 to 44 (mean=20.8, sd=2.87). Close to 63% of the sample was female. Nearly all the Hong Kong respondents were born or had at least 10 years’ residency in Hong Kong (97%) with another two percent from China

while over 98% of the Singapore respondents were born or had at least 10 years' residency in Singapore. For the U.S. sample, nearly 92% of the respondents were born or had at least 10 years' residency in the U.S.

Measures

The twenty items in Wagner's (1995) five IC factors were used to measure individualism-collectivism in the three samples. Scale reliability of the measures across the international sample revealed acceptable Cronbach alpha coefficients: Stand Alone = .70 (5 items), Win above All = .73 (5 items), Group Preference = .83 (3 items), Sacrifice in Group = .79 (4 items), and Individual Thinking = .74 (3 items). The desire for "face gain" (mianzi-gain) and fear of "face loss" (mianzi-loss) measures were taken from Hwang, Francesco, & Kessler (2003) study. Cronbach alpha scale reliability coefficients for the measure across the international sample were .82 for fear of "face loss" and .73 for desire for "face gain."

Analysis

The first analytical step was a hierarchical cluster analysis that used Ward's clustering method and Euclidean distance measures to cluster responses on Wagner's five IC factor items. At each stage of the clustering process, a clustering coefficient that reflected the Euclidean distance required to merge the existing two clusters was compared with a similar coefficient of the previous clustering stage. A larger than normal jump between any two consecutive coefficients indicated a larger than normal required Euclidean distance to merge the existing two clusters versus merger of the previous two clusters. Such a jump is an indicator to halt the process (Aldenderger & Blashfield, 1984). Based on this process, the clustering process was stopped at five clusters. The signal to stop was a 2% jump in cluster coefficient size that would happen at the 4-cluster solution stage compared to a 1% or lesser jump in each of the previous clustering stages. Thus, instead of merging into 4 clusters, it was decided to stop the clustering process at 5 clusters.

The second analysis was a chi-square test of the distribution of respondents across the five clusters taking into consideration the three countries and two gender groups. This examination was needed to test the extent that Maruyama (1980)'s heterogeneity argument of transculturality and transgender influences could be found in the emerging clusters.

The third analysis was an ANOVA test of differences across clusters along the 5 IC factors. If the clustering process did a good job in grouping respondents with similar values together, there should be many significant differences between any two clusters along the 5 IC factors. Finally, the five mean IC values of each cluster were plotted for a visual examination of differences amongst the five clusters for interpretation of the meaning of each cluster.

The last test was an ANOVA test to validate the significance of the emerging clusters by using two separate "Face" measures that were not utilized in the process of identifying the clusters. This approach to validate emerging clusters is supported by Filsinger, Faulkner & Warland (1979) and other researchers who have adopted similar approaches to validate cluster results (Aldenderfer, & Blashfield, 1984: 65).

Results

Table 1 presents the distribution of respondents from the cluster analysis process by cluster, country and gender.

There were respondents from every county and gender in every cluster except cluster 3 where there were no male respondents in the Singapore sample.

COUNTRY	GENDER	CLUSTER					TOTAL
		1	2	3	4	5	
Hong Kong (n=162)	Male	48	19	16	15	4	102
	Female	67	42	11	30	10	160
Singapore (n=128)	Male	5	2	0	7	4	18
	Female	24	19	4	41	22	110
USA (n=234)	Male	44	26	13	16	12	111
	Female	37	38	7	27	14	123
	TOTAL	226	148	54	140	71	624

Table 1: Distribution of Respondents by Cluster, Gender and Country

Chi-square tests of the distribution indicated no significant differences in distribution across countries (Hong Kong chisquare (4df) = 7.85; Singapore chisquare (4df) = 1.30 after Yates Correction for lower than 5 counts; US chisquare (4df) = 7.03). While chisquare for the Singapore sample seems to indicate significant difference, the low number of males in most of the clusters made it difficult to draw clear conclusion of significant difference.

The next test, an ANOVA test of differences across the five clusters indicated significant differences along all the five IC factors (Stdalone F-value (4df)=196; Winall F-value (4df)= 188; GrpPref F-value (4df)=48; Sacrif F-value (4df)=33; Indivthk F-value (4df)=43). Post-hoc tests to identify specific differences between any two clusters was next carried out and the results are shown in Table 2.

Cluster 5(C5) scored significantly lower (2.4) than any of the other four clusters on StdAlone, thus indicating C5 members valued StdAlone the least amongst all 4 clusters. This was followed by Cluster 1(C1) that scored higher (4.0) than C5 but lower than all the remaining three clusters: Cluster 2(C2), Cluster 3(C3) and Cluster 4(C4). C2 and C3 had the highest scores on StdAlone (respectively 5.4 and 5.5), well ahead of the other three clusters, but were not

STDALONE		ROW – COLUMN				
MEAN	STDDEV	CLUSTER	C2	C3	C4	C5
4.0	0.9	C1	-1.41	-1.42	-0.57	1.62
5.4	0.8	C2		-0.01	0.84	3.03
5.5	0.7	C3			0.85	3.04
4.6	0.8	C4				2.19
2.4	0.8	C5				
WINALL		ROW – COLUMN				
MEAN	STDDEV	CLUSTER	C2	C3	C4	C5
4.0	0.9	C1	-0.81	-1.05	1.40	1.68
4.8	1.0	C2		-0.24	2.21	2.49
5.0	0.9	C3			2.45	2.73
2.6	0.8	C4				0.28
2.3	0.8	C5				
GRPPREF		ROW – COLUMN				
MEAN	STDDEV	CLUSTER	C2	C3	C4	C5
4.2	0.9	C1	1.13	-0.85	-0.30	-0.55
3.1	1.1	C2		-1.98	-1.43	-1.68
5.1	0.7	C3			0.55	0.30
4.5	1.5	C4				-0.25
4.8	1.4	C5				

SACRIF		ROW – COLUMN				
MEAN	STDDEV	CLUSTER	C2	C3	C4	C5
5.1	0.8	C1	-0.85	-0.46	-0.65	-0.68
5.9	0.8	C2		0.39	0.19	0.17
5.5	0.84	C3			-0.19	-0.22
5.7	0.74	C4				-0.03
5.7	0.70	C5				
INDIVTHK		ROW – COLUMN				
MEAN	STDDEV	CLUSTER	C2	C3	C4	C5
3.6	1.09	C1	0.58	-1.53	0.69	0.61
3.0	1.23	C2		-2.12	0.11	0.03
5.1	0.89	C3			2.23	2.14
2.9	1.15	C4				-0.08
3.0	1.37	C5				
Sample size (n): Cluster 1=227; Cluster 2=148; Cluster 3=52; Cluster 4=136; Cluster 5=67 ; Bolded figures are significant differences between clusters at p<0.05						

Table 2: Between Cluster Mean Differences Along 5 IC Values

significantly different from each other. Thus, on StdAlone, C2 and C3 were the highest scoring clusters while C5 was the lowest scoring cluster.

As in StdAlone, C2 and C3 also had the highest scores on the WinAll value (respectively, 4.8 and 5.0) and were significantly higher than the scores for C1, C4 and C5. Again C2 and C3 were not significantly different from each other. C1 (4.0) was higher than C4 (2.6) and C5 (2.3) but lower than C2 (4.8) and C3(5.0). In contrast to the two highest clusters of C2 and C3, both C4 and C5 were the two lowest clusters and were not significantly different from each other.

On GrpPref value, C2 scored significantly lower (3.1) than any of the other four clusters. In contrast, C3 had the highest score (5.1) amongst all the five clusters. This is a break from the previous trend where C2 and C3 moved in tandem with highest scores on both individualism values of StdAlone and Winall. C5 had the second highest score (4.8) on GrpPref. It was followed by C4 (4.5). C4 and C1 (4.1) were not significantly different from each other.

On the next value Sacrif, C1 was the lowest scoring cluster (5.1) that is significantly lower than the other four clusters. C3 (5.5) was also significantly

lower than C2 (5.9) on this value. All the other remaining clusters were not significantly different from each other.

On the last value, Indivthk, C3 was significantly higher (5.1) than all the other four clusters. It was next followed by C1 (3.6) that is significantly higher than C2 (3.0), C4 (2.9) and C5 (3.0) but significantly lower than C3. There were no significant differences amongst the remaining clusters.

Another way to examine differences across clusters is to examine the five IC values of each cluster. This is shown in Figure 1 where the 5 IC mean values for each cluster were plotted and compared against those of other clusters. Such an examination will provide a better way to for meaningful interpretation amongst the five clusters.

Cluster 3 is clearly the most extreme cluster with high scores on individualism values of StdAlone, Winall, and Indivthk, as well as collectivism values of GrpPref and Sacrif. It is therefore a cluster whose members could accommodate both high individualism and collectivism values in their value orientations.

Cluster 4 and Cluster 5 were very similar on four values with low scores on individualism values of WinAll and Indivthnk and high scores on collectivism values of GrpPref and Sacrif. The only difference between cluster 4 and cluster

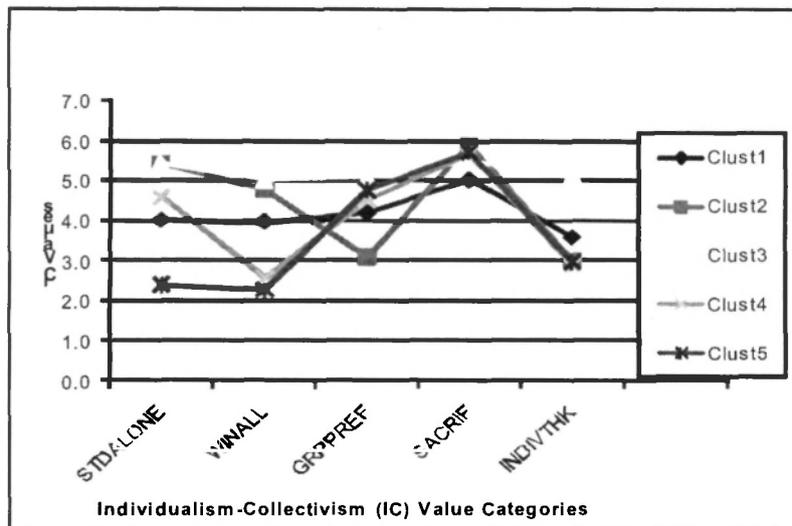


Figure 1 IC Values by Cluster Group

5 is the very low score of cluster 5 but high score of cluster 4 on StdAlone—an individualism value. Clearly, cluster 5 is the perfectly consistent collectivism cluster here while cluster 4 was willing to accept a high value of StdAlone within its predominantly collectivism inclination.

Cluster 1 was the moderate cluster with mid range scores of 3.5 to 4.2 on individualism values of StdAlone, Winall, and Indivthk, and collectivism value of Grppref. There was a slightly elevated score on the collectivism value of Sacrif. Overall, cluster 1 consisted of people with middle range values on both individualism and collectivism.

Cluster 2 scores high on both individualism values of StdAlone and Winall but middle of the range on IndivThk. It also scored high on collectivism values of Sacrif and moderate level on GrpPref. Thus, Cluster 2 consisted of people whose value inclinations ranged between high and moderate on each of the two IC dimensions. In other words, they could accept high individualism and high collectivism as well as moderate individualism and moderate collectivism values. Overall, cluster 2 seems to be a somewhat mixed cluster.

The last test was an ANOVA test to validate the five emerging clusters by examining significant differences along the two “Face” measures: desire for “face gain” and fear of “face loss.” The resulting chisquare differences were significant for both “Face” measures (“face gain” chi-square (4df) = 21.59; “face-loss” chi-square (4df) = 4.62). Post-hoc tests to identify specific differences between any two clusters were next carried out and the results are shown in Table 3.

Nearly all the 5 clusters differed from one another along the desire for “face gain” measure. Significantly higher scores were recorded for clusters 1 (score=4.54), 2 (score 5.02) and 3 (score 5.21) when compared against those of clusters 4 (score = 3.86) and 5 (score = 3.96). Clusters 2 and 3 also scored significantly higher than cluster 1 on this measure. There were no significant differences between cluster 2 and cluster 3, and between cluster 4 and cluster 5. In contrast, there was lesser number of significant differences between clusters along the fear of “face loss” measure. Cluster 5 (score = 3.71) scored significantly lower than cluster 2 (score = 4.59), cluster 3 (score = 4.63) and cluster 4 (score = 4.35) on this second “Face” measure. The ANOVA test results on the two “Face” measures validated to some extent differences between emerging clusters that arose from clustering along the five IC measures.

FACE-GAIN		ROW - COLUMN				
MEAN	STDDEV	CLUSTER	C2	C3	C4	C5
4.54	1.13	C1	-0.49	-0.68	0.67	0.58
5.02	1.25	C2		-0.19	1.16	1.07
5.21	1.19	C3			1.35	1.26
3.86	1.48	C4				-0.09
3.96	1.47	C5				
FACE-LOSS		ROW - COLUMN				
MEAN	STDDEV	CLUSTER	C2	C3	C4	C5
4.21	1.46	C1	-0.38	-0.42	-0.14	0.5
4.59	1.59	C2		-0.04	0.24	0.87
4.63	1.61	C3			0.28	0.92
4.35	1.46	C4				0.64
3.71	1.64	C5				

Sample size (n): Cluster 1=227; Cluster 2=148; Cluster 3=52; Cluster 4 = 136; Cluster 5 = 67; Bolded figures are significant differences between clusters at p<0.05

Table 3: Between Cluster Mean Differences Along “Face-Gain” and “Face-Loss” Values

DISCUSSION

A few interesting findings have emerged from this study. First and foremost, all the five clusters had members from all three countries and thus support the hypothesis that both individualism and collectivism extends beyond country boundaries. The fact that every cluster is significantly different from the next cluster along some value dimensions yet consisted of members in every country supports Maruyama (1995)’s heterogeneity argument that people with similar inclinations could be found in different countries and are not necessarily located in any one country alone. It is also consistent with his transculturality of Individual Types finding and, likewise, raises concern on the problem of analyzing mean score differences between countries since such an approach would not have shown across country similarities and within country differences, both of which emerged in this study. The findings in this study supports the views of some cross-cultural researchers who raised the need to recognize groups who hold differing values from those of the dominant majority within a defined cultural

environment (Oyserman, et. al., 2002; Singelis, et. al., 1995; Triandis, 1995, Voronov & Singer, 2002). However, more than supporting views of these cross-cultural researchers, the findings from this study showed that not only could different values exist within a country sample, it also shows that for some individuals, they could hold different values within themselves—both individualism and collectivism. This is clearly seen in cluster 3 where individuals of this group could live with high values of both individualism and collectivism. Another group that is somewhat similar yet different is cluster 1. All cluster 1 members were willing to accept moderate levels of both individualism and collectivism in contrast to cluster 3 members that could accommodate high scores on both individualism and collectivism values. Cluster 2 exhibited a mix of high scores on some individualistic values (Stdalone and Winall but not Indivthk) and collectivistic (Sacrif but not Grppref) values. Clusters 1, 2 and 3 also scored higher on the desire for face-gain measure when compared against similar scores of clusters 4 and 5.

On the other hand, cluster 5 was the consistent collectivism cluster that had low values on all individualism values and high values on all collectivism values. Cluster 4 is also a collectivism inclined cluster that is very similar to cluster 5 except for its moderately higher score on Stdalone—an individualistic value. Yet, membership of these clusters came from all three countries, including the US that has been traditionally deemed to be more individualism inclined than other countries in the world. On the validating fear of “face loss” measure, cluster 5 (score = 3.71) was significantly lower than cluster 2 (score = 4.59), cluster 3 (score = 4.63) and cluster 4 (score = 4.35).

Perhaps, the most interesting finding here is the high scores on the Sacrif collectivism value by all the five emerging clusters. This willingness to accept individual sacrifices in group situations is a value that is shared by all cluster members—whether they are individualism or collectivism inclined. Such consistent support across all the five clusters supports the view of some researchers who have spent substantial time in different cultural environments and noticed the willingness of all people to accommodate in some way the needs of others in order to be accepted by them (Brown & Levinson, 1987; Goffman, 1967; Holtgraves & Yang, 1990; Lerner, 1996). Thus, while there may be a tendency towards individualism or collectivism inclination, the emerging finding on acceptance of Sacrif by all five different clusters showed a rare similarity across

groups that have different value inclinations and across all three countries. This similarity is intriguing and should be further examined to determine how it influences behaviors and interactions, despite other underlying differences in IC orientations.

Another interesting question to consider is the extent these five clusters may be consistent with some of the characteristics that were revealed in Maruyama (1980, 1985)'s four common Individual Types. An examination of the social activity and organization preference of H-Types showed collectivism related characteristics such as in-group homogeneity, conformity and cohesion. Collectivism-related characteristics of mutual dependency and preservation of harmony were also present in the S-Type. These collectivism related characteristics are consistent with the GrpPref and Sacrif collectivism values in Wagner(1995)'s 5 IC factors.. S-Type characteristics of interacting with others and adjusting to the needs of others for mutual benefit is consistent with the Sacrif collectivism value that recognizes the need for individual sacrifices in the group. The same recognition of the need to interact for mutual benefit is also present in the G-Type.

In contrast, the I-Type had individualism characteristics such as avoiding social obligations and preference for independence that are present in Wagner(1995)'s individualism values of StdAlone, Winall and IndivThk. Thus, there seems to be some parallel between characteristics of Maruyama (1980)'s four most common Individual Types and individualism and collectivism values.

Based on the similarity in characteristics between Maruyama(1980)'s four most frequently found Individual Types and Wagner(1995)'s 5 IC values, the emerging Cluster 5 (the most consistent collectivism inclined cluster in this study is likely to be most similar to the H-Type while Cluster 2, the most individualism inclined cluster, is most similar to the I-Type. The rest of the clusters-C1, C3, and C4 that embodied varying levels of both collectivism and individualism seems to reflect some amount of H, I, G and S Types. Overall, there seems to be some similarity between the emerging clusters in this study and Maruyama(1980) Individual Types despite the use of different stimuli for classification of responses. To the extent Maruyama (1980)'s Types include underlying cultural values, his four Types should be examined further for their cross-cultural research implications.

The findings that groups could be inclined towards either individualism or collectivism in contrast to an “opposite” dominant value inclination of the countries that they reside in, or presence of contrasting values that could be held by same individuals raise questions on how researchers should treat samples that were supposedly to come from countries that are high on one dimension, either individualism or collectivism. Indeed, Voronov & Singer (2002) has gone to the extent of arguing that using IC as a value to differentiate country nationals is an unrealistic approach. They have found, for example, studies that showed Japanese—a supposedly more collectivism inclined people to behave, under a given set of conditions, in ways that reflect higher individualism than Americans, who were supposed to be one of the highest individualism inclined people in the world. Even within the US, Oyserman, et. al., (2002) pointed to variability in individualism amongst different ethnic groups with African Americans having the highest individualism preference while no significant differences could be found between Latino and European Americans on this value. In contrast, Asian and Latino Americans scored higher than European Americans and African Americans on collectivism with no difference between African Americans and European Americans on this orientation. All these more recent studies should raise caution on using country boundaries to delineate cultural differences. They also indicate the possibility of groups holding both individualism and collectivism values and thus are consistent with the empirical findings in this study.

What are some of the implications from the results of this study? First, there is a need to emphasize the importance of letting the data speak for itself in cross-cultural research instead of assuming country boundaries to be the cultural value boundaries. Clearly, there is sufficient argument to rethink the meaning of cultural boundaries today. The danger of continuing the practice of using country boundaries to delineate cultural differences could put cross-cultural studies at risk of ignoring values that have long transcended country or geographical boundaries. While Maruyama (1980) raised alarm on the need to recognize transculturality of Individual Types, results from this study showed that transculturality of some cultural values also have to be considered by researchers. The emerging empirical findings from this study are clearly in agreement with those who have observed similarity of behaviors across cultures (Oyserman, et. al., 2002; Voronov & Singer, 2002).

Second, if individuals or groups could hold within themselves both moderate to high levels of individualism as well as collectivism values, then studies that have revealed tendency of individualists or collectivists to engage in one form of behavior versus another may be a function of some temporal effect when, say for a time, individualism tendency is stronger than collectivism tendency or some contextual effect raises the salience of individualism versus collectivism tendency in the situation. This is a troubling thought since we do not know how individuals and groups that hold high individualism as well as high collectivism values may make decisions in different situations or times. Under what conditions do individualism or collectivism values take precedence?

Third, this study has revealed groups with varying degree of IC values. There was cluster 3 that held highly both individualism and collectivism values, cluster 5 that was clearly a collectivism cluster and cluster 2, a somewhat individualism inclined cluster. Clearly, clusters 5 and 2 were, respectively, the traditional collectivism and individualism groups. For these two clusters, past findings on how groups with an individualism or collectivism inclination may behave would likely continue to apply to individuals in these clusters (Earley, 1989; Earley, 1993; Hofstede, 2001; Sagie & Avcan, 2003; Sosik & Jung, 2002). Continuing research on how such individualism or collectivism consistent people would behave should be done to help increase understanding of how individualism and collectivism values may impact their behaviors.

There is also a need to explore how individualism inclined or collectivism inclined groups could develop in different countries. While the current convention is to describe the US as a more individualism inclined country and Asian countries as more collectivism inclined countries, findings from this study as well as those by Oyserman et al., (2002) and Voronov & Singer (2002), do indicate the need to go beyond country level analysis and explanation of IC values. Little work has been done to reveal how subgroups within each of these countries could end up to be more individualism or collectivism inclined than the rest of the population in a country. A possible starting point is to start mapping out cultural value orientations within a country by letting the data tell its own story and draw its own boundary. Maruyama(2002)'s heterogram analysis that uses pictograms and cluster analysis to develop boundaries of Individual Types is one such approach since Individual Types have been shown to have some overlaps with IC value characteristics. A more cultural value specific approach is to collect IC

and other known cultural value data before subjecting them to cluster analysis to reveal natural value boundaries in the sample.

As research methods grow in sophistication, there should emerge other ways to identify cultural groups according to their underlying value differences, and thus enable us to better understand preferences and behaviors of naturally differing cultural groups rather than assume country boundaries as cultural boundaries to explain cross-cultural differences in behaviors.

LIMITATIONS

The findings in this study must be interpreted in light of its limitations. First, the sample was relatively small at the individual country level. Also the sample was drawn from three sets of undergraduate students, each from only one university in one country. It is possible that the students themselves were not representative of students in their respective countries or students in general. Second, in contrast to Maruyama's earlier works (1980, 1985, 1995, 1999) that examined broad Individual Types, this present study had focused more narrowly on five facets of individualism-collectivism. A wider set of value measures, such as power-distance, uncertainty-avoidance and other known cross-cultural values could reveal more interesting information about each cluster. Third, the comparison of the IC cluster groups to Maruyama (1980, 1985)'s four Individual Types is an initial effort to relate IC to Individual Types and should be subjected to more stringent tests of fit in future studies. In so doing, the degree of overlaps between Individual Types and cross-cultural values could be better demarcated and examined for their research implications.

REFERENCES

- Aldenderfer, M.S., & Blashfield, R.K. (1984). *Cluster Analysis*. Newbury Park, Cal: Sage Publications.
- Bond, M.H. (1996). Chinese Values. In M. H. Bond (Ed.) *The Handbook of Chinese Psychology*. (pp 208-227). NY: Oxford University Press.
- Brown, P. & Levinson, S. (1987). *Politeness: Some universals in language usage*. Cambridge, UK: Cambridge University Press.
- Earley, P.C. (1989). Social loafing and collectivism: A comparison of the United States and the People's Republic of China. *Administrative Science Quarterly*, 34: 565-581.

Earley, P.C. (1993). East meets West meets Mideast: Further explorations of collectivistic and individualistic work groups. *Academy of Management Journal*, 36(2): 319-348.

Earley, P.C. (1997). *Face, harmony, and social structure*. New York: Oxford University Press.

Earley, P.C. & Erez, M. (1997). *The transplanted executive: Why you need to understand how workers in other countries see the world differently*. NY: Oxford Press.

Filsinger, E., Faulkner, J., & Warland, R. (1979). Empirical taxonomy of religious individuals: an investigation among college students. *Sociological Analysis*, 40: 136-146.

Goffman, E. (1967). *Interaction ritual: Essays on face-to-face behavior*. New York: Random House.

Hallahan, M., Lee, F., & Herzog, T. (1997). It's not just whether you win or lose, it's also how you play the game: A naturalistic, cross-cultural examination of the positivity bias. *Journal of Cross-Cultural Psychology*, 28(6): 768-778.

Hartigan, J. (1975). *Clustering algorithms*. New York: John Wiley.

Hofstede, G. (2001). *Culture's consequences: Comparing values, behaviors, institutions, and organizations across nations*, 2nd Ed. Thousand Oaks, CA: Sage.

Hofstede, G. (1980). *Culture's consequences: International differences in work-related values*. Beverly Hills, CA: Sage.

Holtgraves, T. & Yang, J. (1992). Interpersonal underpinnings of request strategies: General principles and differences due to culture and gender. *Journal of Personality and Social Psychology*, 62: 246-256.

Hwang, A., Francesco, A.M., Kessler, E. (2003). The Relationship between Individualism-Collectivism, Face and Feedback and Learning Processes in Hong Kong, Singapore and the United States. *Journal of Cross-Cultural Psychology*, 34(1): 72-91

Lam, S.S.K., Schaubroeck, J., & Aryee, S. (2002). Relationship between organizational justice and employee work outcomes: A cross-national study. *Journal of Organizational Behavior*, Vol.23, Iss. 1; pg. 1- 15

Lerner, G.H. (1996). Finding "face" in the preference structures of talk-in-interaction. *Social Psychology Quarterly*, 59: 303-321.

- Maruyama, M. (1980). Mindscapes and Science Theories. *Current Anthropology*, 21(5): 589-600.
- Maruyama, M. (1985). Mindscapes: How to understand specific situations in Multicultural Management. *Asia Pacific Journal of Management*, 2(3): 125-149.
- Maruyama, M. (1995). Individual epistemological heterogeneity across cultures and its use in organizations. *Cybernetica*, 37(3): 215-249.
- Maruyama, M. (1999). Heterogram analysis: Where the assumption of normal distribution is illogical. *Human Systems Management*, (18): 53-60.
- Olson, M. (1971). *The logic of collective action*. Cambridge, MA: Harvard University Press.
- Oyserman, D., Coon, H.M. and Kemmelmeier, M. (2002). Rethinking Individualism and Collectivism: Evaluation of Theoretical Assumptions and Meta-analyses, *Psychological Bulletin*, 128(1): 3-72.
- Sagie, A., & Avcan, Z. (2003). A cross-cultural analysis of participative decision-making in organizations. *Human Relations*, Vol.56, Iss. 4; pg. 453-462.
- Singelis, T.M., Triandis, H.C., Bhawuk, D.P.S. & Gelfand, M.J. (1995). Horizontal and vertical dimensions of individualism and collectivism: A theoretical and measurement refinement. *Cross-Cultural Research*, 29(3): 240-275.
- Sosik, J. J., Jung, D. I. (2002). Work-group characteristics and performance in collectivistic and individualistic cultures. *Journal of Social Psychology*, 142 (1):5-23
- Triandis, H.C. (1995). *Individualism and collectivism*. Boulder, CO: Westview Press.
- Triandis, H.C., Bontempo, R., Villareal, M., Asai, M., & Lucca, N. (1988). Individualism and collectivism: Cross-cultural perspectives on self-ingroup relationships. *Journal of Personality and Social Psychology*, 54: 323-338.
- Voronov, M., & Singer, J. A. (2002). The myth of individualism-collectivism: A critical review. *Journal of Social Psychology*. 142(4): 461-481
- Wagner, J.A., III. (1995). Studies of individualism-collectivism: Effects on cooperation in groups. *Academy of Management Journal*, 38(1): 152-172.
- Wagner, J.A., III & Moch, M.K. (1986). Individualism-collectivism: Concept and measure. *Group and Organization Studies*, 11:280-303.