THE APPLICATION OF MULTIDIMENSIONAL SCALING ON CROSS-CULTURAL STUDY OF PARENTAL EXPECTATION AMONG MIDDLE-CLASS YOUNG PARENTS

應用多層面量表法探討中美知識份子對子女的期望

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摘 要

本研究應用多層面量表法來探討中美文化上父母期望的差異情形。十個在美國留學的中國留學生家庭與十個在同校就讀的美國研究生家庭，根據孩子的性別、出生別、年齡、家庭人口數，以及父母教育水準加以配對，作爲本研究的取樣。這些家庭中，父母對子女的期望是用父母對子女的期望量表加以評量。量表的內容包括十個人格特性的形容詞。這些形容詞可分成兩類，一類是社會能力，另一類是知性能力，每類各有五個形容詞。請父母根據他們對子女的期望加以評等。此外，父母對於這十個形容詞的知覺，則是他們對形容詞之間相似程度的衡量。俟上述二項資料收集完畢，應用多層面量表法加以分析，而繪出父母對子女的期望圖。

由期望圖所顯示的期望等第，經Mann-Whitney U test的考驗，發現美國父母親對子女的期望，不偏知性能力也不偏社會能力，而中國父母親則對子女的社會能力期望顯著地高於知性能力，這種結果部份支持了前人研究的發現。

ABSTRACT

The present study was an exploratory attempt of using multidimensional scaling (MDS) on the cross-cultural study of parental expectation among middle-class young parents between America and China.

Parents of 20 families (10 American, 10 Chinese) matched according to

the child's sex, birth order, age, family size and parents' educational, were asked to indicate their expectations for their child's ability on the parental expectation inventory, and also indicate the similarity of 10 personality trait adjectives on similarity ranking inventory. MDS analysis was then employed to generate the configuration of preference map of the parental expectation.

The preference ranking of parental expectation as indicated by the preference map was then analyzed by Mann-Whitney U Test. The results showed that the American parents had somewhat equal expectation of their child's social ability and intellectual ability. Whereas, the Chinese parents had higher expectation of their child's social ability than intellectual ability.

The limitations of this study and the problems encountered by using MDS on cross-cultural study of parental expectation were also discussed.

INTRODUCTION

Chinese and American parents appeared to be different in their expectation for their children's ability. Kagan and Madson (1971, 1972) pointed out that American children were reared in a developmental milieu in which competition was strongly rewarded, and the children tended to be more individual-centered. Other authors pointed out that Chinese parents expected their child to be more social-oriented, and that interpersonal relationship was emphasized in the Chinese culture (Northrop, 1946, Hsu, 1972).

The purpose of this study is to employ multidimensional scaling analysis to explore the possible difference in parental expectation between American and Chinese.

An Empirical Study Using Multidimensional Scaling Technique

Twenty families associated with Indiana University in Bloomington (10 American and 10 Chinese families) were matched according to the child's sex, birth order, age and parents' educational level. The children's ages ranged from one year and a half to five years old. Parents' expectations for their child's intellectual and social ability data were collected using two inventories which included paired comparison and similarity ranking of 10 personality trait adjectives.

The parents' responses on these two inventories were analyzed by multidimensional scaling techniques (MDS). MDS is a method of data analysis based upon a geometric model which represents a set of objects as points in space. The distance between points reflects the similarity of the objects they represent. Given a set of

objects, such as trait names or adjectives. MDS provides an estimate of the number of dimensions necessary to represent the interrelationships between those objects.

Rosenberg, Nelson, and Vivekanantilan (1968) found that MDS provided a useful representation of the dimensional structure of personality-trait adjectives. Specifically, Rosenberg, *et al* ., (1968) found that a two-dimensional solution provided a satisfactory model for the dimensional structure of common personality-trait terms. Thus, a two-dimensional solution would be expected for the cross-cultural comparison of parental expectation.

One of the restrictions for using MDS is that the ratio of stimuli and dimension should be at least 3:1 or even 5:1. Therefore, in the present study 10 adjectives were selected from those used by Rosenberg, *et al.*, to represent a fair sample of the social and intellectual ability.

Three computer programs were used. The first program, Triangulization Conjoint data analysis (TRICON) by Carmone, Green & Robinson (1968) was used to transform similarity ranking data into preference ranking values. The second program, KYST, was used to transform chain order values (output from TRICON) program into a configuration with coordinates. The third program, Preference Map program (PREFMAP) by Carroll and Chang (Carroll, 1972) was used to transform the average coordinate values (output from KYST) and individual preference ranking values (output from TRICON) into an ideal point configuration.

The configuration of the preference map permits us to see the differences of parental expectation among different groups. Vectors of the average ideal point in the configuration were compared among four groups, American and Chinese, mothers and fathers.

Brief Description of Three Computer Programs Used in the Present Study

The TRICON (Triangularization of Conjoint Data) program has been designed to process rank order similarity data from "raw" responses. Up to 15 stimuli can be handled, yielding as output a vector of ranks and frequencies and a half-matrix of ranks and frequencies for submission to nonmetric scaling programs. The program utilizes the triangularization method of Combs (1964).

The response data are first arranged in a square dominance matrix consisting of rows and columns that encompass all stimulus pairs; a one is placed in the cell if row dominates column. Rows and columns are then permuted in an attempt to triangularize the matrix. The number and location of intransitivities are then printed out. Finally, the "best" complete order of proximities is printed in both vector and half matrix form. Cards are also punched as input to multidimensional scaling pro-

grams.

The KYST (formed from the initials Kruskal, Young, Shepart, and Torgerson) program includes the initial configuration procedure from TORSCA (Young and Torgerson, 1967) as well as the practice of rotating solutions to principal components. KYST incorporates the generality of M-D-Scal 5M, as well as M-D-Scal's procedure for input.

KYST places N points in a space of dimension chosen so as to minimize stress, which measures the "badness-of-fit" between the configuration of points and the data. It finds the minimizing configuration by starting with some configuration, and moving all the points a bit to decrease the stress, then iterating this procedure over and over again until the stopping criterion is reached. Typically, from 15 to 50 iterations may be required. Technically speaking, KYST uses the iterative numerical method of gradients (the method of steepest descent), with a step-size procedure based primarily on the angles between successive gradients.

PREFMAP is a computer program which relates preference data to a multidimensional solution via a hierarchy of models, ranging from a linear "vector model" through the Coombs, Bennett and Hays "multidimensional unfolding model," and finally including generalizations of the multidimensional unfolding model. Given a stimulus configuration of N points in K dimensional space and a set of preference scales in the form of a subject-by-stimulus matrix, the program finds for each individual an ideal point in the given stimulus space such that the squared Euclidean distances from each stimulus to the ideal point are linearly (in the metric case) or monotonically (in the nonmetric case) related to the preferences expressed by the subject.

PREFMAP consists of four phases corresponding to the four models. Phase 1 is the most general model in which each individual is allowed his own orientation and weighting of dimensions. Phase 2 allows each individual differential weighting of dimensions only. In Phase 3, all subjects are assumed to have the same orientation of weighting of dimensions, while Phase 4 corresponds to the vector model. It is Phase 4 which is employed in the present study in which linear correlation between the preference scales (data) and the projections of the stimulus points on the fitted vectors is maximized.

The input data is in the form of a subjects-by-stimuli matrix. Each row of the matrix represents a subject and the entries in the row are the preference judgments made by the subject on each of the stimuli. The maximum number of subjects that can be analyzed in PREFMAP is 49, and the maximum number of stimulus points allowed is 64. The maximum number of dimensions allowed is five.

METHOD

The Collection of Paired Comparison Data

1) Subjects are asked to choose one adjective from each pair indicating what they prefer their child to be. For instance, Mr. A indicates his preference as follows (the preferred adjective is indicated with an asterisk):

PARENTAL EXPECTATION INVENTORY

INSTRUCTION: Please choose one adjective from each pair indicating what you prefer your child to be.

*Competent (4)..... Modest (7)
*Competent (4)..... Warm (6)
*Competent (4)..... Sociable (5)
Warm (6).....*Modest (7)
Warm (6).....*Sincere (8)
Warm (6).....*Creative (9)
*Intelligent (2)..... Modest (7)
*Intelligent (2)..... Warm (6)
*Intelligent (2)..... Sociable (5)
*Intelligent (2)..... Competent (4)
Intelligent (2).....*Imaginative (3)
Industrious (1).....*Considerate (10)
Industrious (1).....*Creative (9)
Warm (6).....*Considerate (10)
Modest (7).....*Sincere (8)
Modest (7).....*Creative (9)
Modest (7).....*Considerate (10)
Sincere (8).....*Creative (9)
*Sincere (8)..... Considerate (10)
*Industrious (1)..... Warm (6)
Industrious (1).....*Sociable (5)
Industrious (1).....*Competent (4)
Industrious (1).....*Imaginative (3)
Industrious (1).....*Intelligent (2)
*Sociable (5)..... Warm (6)

Sociable (5) ..... *Modest (7)
Sociable (5) ..... *Sincere (8)
Sociable (5) ..... *Creative (9)
*Creative (6) ..... Considerate (10)
Imaginative (3) ..... *Creative (9)
*Competent (4) ..... Sincere (8)
*Competent (4) ..... Creative (9)
*Competent (4) ..... Considerate (10)
*Imaginative (3) ..... Considerate (10)
Industrious (1) ..... *Sincere (8)
*Industrious (1) ..... MOdest (7)
*Imaginative (3) ..... Sincere (8)
*Imaginative (3) ..... Modest (7)
*Imaginative (3) ..... Warm (6)
*Imaginative (3) ..... Sociable (5)
Imaginative (3) ..... *Competent (4)
*Intelligent (2) ..... Considerate (10)
Intelligent (2) ..... *Creative (9)
*Intelligent (2) ..... Sincere (8)
Sociable (5) ..... *Considerate (10)

Then Mr. A's paired comparison matrix would look like this:

Stimulus	Stimulus 1	2	3	4	5	6	7	8	9	10
1	0	0	0	0	0	1	1	0	0	0
2	1	0	0	1	1	1	1	1	0	1
3	1	1	0	0	1	1	1	1	0	1
4	1	0	1	0	1	1	1	1	1	1
5	1	0	0	0	0	1	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	1	1	0	0	0	0
8	1	0	0	0	1	1	1	0	0	1
9	1	1	1	0	1	1	1	1	0	1
10	1	0	0	0	1	1	1	0	0	0

In this matrix, number 1 to 10 stands for 10 stimuli. In the first pair (competent (4) .... modest (7)), competent (4) is preferred by Mr. A, therefore in the intersection of No. 4 and No. 7, 1 is the entry (read the left-hand side stimulus first). In the fourth pair (warm (6) .... modest (7)), warm (6) is not preferred by Mr. A, therefore, in the intersection of No. 6 and No. 7, zero is the entry. This procedure is done only with the upper half matrix, the lower half matrix is the opposite of the upper half matrix (e.g., 1 becomes zero, and zero becomes 1).

2) This whole matrix is then inputed to the TRICON computer program in order to get Mr. A's preference ranking of these 10 stimuli.

The preference ranking value is printed in vector form. Cards are also punched as input for the PREFMAP program.

3) In the present study, TRICON output of preference ranking values for the 10 subjects on the 10 stimuli is like this:

Ranking Value of Stimulus

Stimulus

I.D. Number	1	2	3	4	5	6	7	8	9	10
111	2.0	7.0	8.0	10.0	3.0	1.0	4.0	8.0	9.0	5.0
211	1.0	10.0	5.0	6.0	3.0	2.[illegible]	8.0	8.0	4.0	8.0
411	6.0	5.0	2.0	3.0	1.0	7.[illegible]	4.0	9.0	7.5	10.0
311	5.0	8.0	2.0	9.0	10.0	6.0	1.0	3.0	7.0	4.0
511	1.0	10.0	8.0	7.0	3.0	4.0	2.0	6.0	9.0	5.0
611	7.0	6.0	2.0	8.0	1.0	3.0	5.0	10.0	4.0	9.0
711	7.0	10.0	9.0	6.0	4.0	3.0	1.0	5.0	8.0	2.0
811	5.0	8.0	2.0	5.0	5.0	7.0	2.0	10.0	2.0	9.0
911	5.5	2.0	5.5	9.0	5.5	5.5	1.0	10.0	8.0	3.0
1011	6.0	8.0	9.0	10.0	5.0	1.0	4.0	2.0	7.0	3.0

in this example we have TRICON output of perference ranking value for 10 subjects (from No. 111 to No. 1011). The number in each row, from left to right are the ranking value for stimulus 1 to stimulus 10.

4) These preference ranking values are then inputed to the PREFMAP program to obtain an ideal point (the distance from this point to each stimulus will reflect the extent of the preference for this group to that stimulus) for the group as a whole.

This output from PREFMAP will be discussed together with similarity data.

The Collection of Similarity Data

1) Subjects are asked to rank the similarity of 10 adjectives (stimuli) following the instruction given in similarity ranking inventory.
Note that each adjective in turn becomes the reference item.

2) Mr. A's rankings are indicated in the following example (the ranking value is shown right above each adjective).

SIMILARITY RANKING INVENTORY

Instruction:

There are 10 adjectives in the following pages; each adjective will be singled out in turn and become the reference item. For each reference adjective, use a nine points scale to rank those remaining, in the sense of being close to the reference item. Write the rank order right above every adjective. One should be assigned to the adjective which you perceive to be most similar to the reference item. Nine should be assigned to the adjective which you perceive to be least similar to the reference item.

INDUSTRIOUS (1), INTELLIGENT (2), IMAGINATIVE (3), COMPETENT (4), SOCIABLE (5), WARM (6), MODEST (7), SINCERE (8), CREATIVE (9), CONSIDERATE (10).

1) * INTELLIGENT (2) (Reference Item)

5	9	7	8	2
SOCIABLE (5)	WARM (6)	MODEST (7)	SINCERE (8)	CREATIVE (9)
6		4	3	
CONSIDERATE (10)		INDUSTRIOUS (1)	IMAGINATIVE (3)	
1				
COMPETENT (4)				

2) * CREATIVE (9) (Reference Item)

3	4	7	8	5
COMPETENT (4)	SOCIABLE (5)	WARM (6)	MODEST (7)	SINCERE (8)
6	9		2	
CONSIDERATE (10)	INDUSTRIOUS (1)		INTELLIGENT (2)	
1				
IMAGINATIVE (3)				

3) * CONSIDERATE (10) (Reference Item)

8	1	5	3	2
COMPETENT (4)	SOCIABLE (5)	WARM (6)	MODEST (7)	SINCERE (8)

9 6 4 7
CREATIVE (9) INDUSTRIOUS (1) INTELLIGENT (2) IMAGINATIVE (3)

4) * WARM (6) (Reference Item)
9 1 3 4
COMPETENT (4) SOCIABLE (5) MODEST (7) SINCERE (8)
7 2 5
CREATIVE (9) CONSIDERATE (10) INDUSTRIOUS (1)
8 6
INTELLIGENT (2) IMAGINATIVE (3)

5) * MODEST (7) (Reference Item)
8 2 4 1 7
COMPETENT (4) SOCIABLE (5) WARM (6) SINCERE (8) CREATIVE (9)
2 5 8
CONSIDERATE (10) INDUSTRIOUS (1) INTELLIGENT (2)
6
IMAGINATIVE (3)

6) * COMPETENT (4) (Reference Item)
3 9 8 6 2
SOCIABLE (5) WARM (6) MODEST (7) SINCERE (8) CREATIVE (9)
7 4 1
CONSIDERATE (10) INDUSTRIOUS (1) INTELLIGENT (2)
5
IMAGINATIVE (3)

7) * SINCERE (8) (Reference Item)
3 4 7 8 5
COMPETENT (4) SOCIABLE (5) WARM (6) MODEST (7) CREATIVE (9)
6 9 2
CONSIDERATE (10) INDUSTRIOUS (1) INTELLIGENT (2)
1
IMAGINATIVE (3)

8) * IMAGINATIVE (3) (Reference Item)
4 8 7 6 1
SOCIABLE (5) WARM (6) MODEST (7) SINCERE (8) CREATIVE (9)
9 5 2
CONSIDERATE (10) INDUSTRIOUS (1) INTELLIGENT (2)
3
COMPETENT (4)

9) * INDUSTRIOUS (1) (Reference Item)

2	5	6	1	9
SOCIABLE (5)	WARM (6)	MODEST (7)	SINCERE (8)	CREATIVE (9)
4		8	7	
CONSIDERATE (10)		INTELLIGENT (2)	IMAGINATIVE (3)	
3				
COMPETENT (4)				

10) * SOCIABLE (5) (Reference Item)

8	1	2	5	7
COMPETENT (4)	WARM (6)	MODEST (7)	SINCERE (8)	CREATIVE (9)
3		9	4	
CONSIDERATE (10)		INDUSTRIOUS (1)	INTELLIGENT (2)	
6				
IMAGINATIVE (3)				

Mr. A's ranking of the 10 stimuli:

	RANK								
	1	2	3	4	5	6	7	8	9
1. industrious	8	5	4	10	6	7	3	2	9
2. intelligent	4	9	3	1	5	10	7	8	6
3. imaginative	9	2	4	5	1	8	7	6	10
4. competent	2	9	5	1	3	8	10	7	6
5. sociable	6	7	10	2	8	3	9	4	1
6. warm	5	10	7	8	1	3	9	2	4
7. modest	8	5	10	6	2	3	9	4	1
8. sincere	7	10	5	6	2	1	3	9	4
9. creative	3	2	4	5	8	10	6	7	1
10. considerate	5	8	7	2	6	1	3	4	9

Note entries in the body of the table designate the adjective identified in the left-hand column.

For instance, according to Mr. A's response, sincere (8) is most similar to

industrious (1), therefore, when industrious (1) is the reference item, sincere (8) is put under the similarity ranking 1.

These data are tabulated separately for each subject, and then input to the TRICON program.

3) The data output from TRICON looks like this:

Similarity Ranking Value

	1.	4050 3750 3900 2600 1850 4200 1650 2950 2500
	2.	2100 2400 2100 1150 3350 1400 0150 1650
	3.	2950 3750 2100 4500 3500 1400 2300
	4.	0800 0900 1400 3600 1150 0700
Stimuli	5.	1000 1850 0500 3200 0400
	6.	2950 0150 3350 0300
	7.	2950 4300 2700
	8.	4050 0600
	9.	4400

In this example, the ranking value of the similarity between stimulus 1 and 2 is 40.50, between stimulus 1 and 3 is 37.50 (read the first row) between stimulus 2 and 3 is 21.00 (second row) between stimulus 3 and 4 is 29.50 (third row).

4) This upper half similarity matrix of each subject is then input into KYST program to obtain a dimension configuration with coordinate values.

5) The preference ranking value (output from TRICON using paired comparison data) and the dimensional coordinate value (output from KYST using similarity data) are then input into PREFMAP program. The output from PREFMAP are like those presented int the result section.

RESULTS

On all the plots (plot 1 to 4), 1 through 9 plus A refer to 10 adjectives B through K refer to a vector of ideal points for the individual subject, and L is the average ideal point of all the subjects in that particular group. In order to make the configuration more readable, a line is drawn through origin and L (average ideal point of the group), call this line the fitted vector. From each stimulus, a perpendicular line is also drawn to the fitted vector. The higher the value of projection on the fitted vector the closer the adjective is to the average ideal point and the more desirable is the adjective to average subject.

On all the plots, the horizontal axis clearly divided into two almost identical

clusters, separated by the central line (see plot 1 to 4).
One cluster included:
"considerate", "modest", "sociable", "sincere", "warm".
The other cluster included:
"industrious", "competent", "imaginative", "intelligent", "creative".
However, on plot 3 (American father) the direction of the two clusters on horizontal taxis was switched as caused by the rotation of the axis to provide a best fitted configuration. The resultant cluster of adjectives provide a best fitted configuration. The resultant cluster of adjectives for the horizontal axis was presented on Table 1. It was apparent that, in this dimension, the parents from the two cultures had similar perception on these personality trait adjectives.

On the vertical axis, there were also two clusters divided by central line. For the American Fathers (plot 3) and American Mothers (plot 4), their perception of these attributes was so similar that each cluster consisted the same personality traits. That was, one cluster included "industrious", "competent", "warm", "sincere", and "considerate". The other cluster included "sociable", "modest", "creative", "imaginative", and "intelligent". Only that the directions of the clusters were also switched to provide a best fitted configuration. The result was presented on Table 2.

For the Chinese parents (plot 1 and 2), the two clusters on vertical axis were also very similar, except the attributes "sincere" and "considerate" were switched to different cluster on their respective map. The result was presented on Table 3.

In sum, the perception on these ten personality traits for the parents of these two countries was almost identical on the dimension of horizontal axis. Whereas, on the dimension of vertical axis, the perceptual similarity between American father and mother was higher than those of Chinese parents.

In order to find out the direction of parental expectation, the ten adjectives were divided into two groups as suggested by Rosenberg et al (1968). One group designated as intellectual ability, the other group as social ability. The former group included: "modest", "sincere", "considerate", "sociable", and "warm". The latter group included: "competent", "industrious", "intelligent", "creative" and "imaginative".

The ten adjectives on each preference map was weighted according to their ranking. The adjective with highest rank (the one with largest projection value) was weighed with a value of ten. The adjective which ranked second was weighted with a value of nine, and the adjective which ranked last was weighted with a value of one and so on. The ranks and the weighted values of these adjective for each preference map were summarized on Table 4.

Table 1. The Components of Two Clusters on *Horizontal* Axis for the Two Countries

Cluster One	Cluster Two
Industrious	Considerate
Competent	Modest
Imaginative	Sociable
Intelligent	Sincere
Creative	Warm

Table 2. The Components of Two Clusters on *Vertical* Axis for the *American Parents*

Cluster One	Cluster Two
Industrious	Modest
Competent	Sociable
Warm	Intelligent
Sincere	Imaginative
Considerate	Creative

Table 3. The Components of Two Clusters on *Vertical* Axis for the *Chinese Parents*

Cluster One		Cluster Two	
Chinese Father	Chinese Mother	Chinese Father	Chinese Mother
Industrious	Industrious	Imaginative	Imaginative
Competent	Competent	Intelligent	Intelligent
Modest	Modest	Creative	Creative
Considerate	Sincere	Sociable	Sociable
		Warm	Warm
		Sincere	Considerate

Table 4. Summary of Preference Ranking and Weighted Values of Each Group

	Social Ability	Rank	Weight	Intellectual Ability	Rank	Weight
Chinese Father	Modest	1	10	Industrious	6	5
	Sincere	2	9	Competent	7	4
	Considerate	3	8	Intelligent	8	3
	Sociable	4	7	Creative	9	2
	Warm	5	6	Imaginative	10	1
Chinese Mother	Sociable	1	10	Imaginative	4	7
	Warm	2	9	Imaginative	6	5
	Considerate	3	8	Intelligent	7	4
	Sincere	5	6	Competent	9	2
	Modest	8	3	Industrious	10	1
American Father	Sociable	1	10	Creative	3	8
	Modest	2	9	Imaginative	4	7
	Warm	5	6	Intelligent	7	4
	Sincere	6	5	Industrious	9	2
	Considerate	8	3	Competent	10	1
American Mother	Modest	3	8	Creative	1	10
	Sociable	5	6	Imaginative	2	9
	Warm	7	4	Intelligent	4	7
	Sincere	9	2	Competent	6	5
	Considerate	10	1	Industrious	8	3

Table 5. Result of Mann-Whitney U Test for Each Group

Chinese Father	Chinese Mother	American Father	American Mother
U = 0 *	U = 4 *	U = 7	U = 6
P = .004	P = .048	P = .155	P = .111

* Both Chinese Father and Mother Had Higher Weighted Value on Social Ability than Intellectual Ability
$n_1 = 5$, $n_2 = 5$

A comparison of the weighted values between intellectual ability and social ability within each group were carried out by using Mann-Whitney U test. The result was presented on Table 5.

The results indicated that the American parents had somewhat equal expectation of their child's social ability and intellictual ability. Whereas, the Chinese parents had higher expectation of their child's social ability than intellectual ability.

DISCUSSION

The present study was an exploratory attempt of using MDS on the cross-cultural study of parental expectation among middle-class young parents. The results from the preference map indicated that Chinese parents had higher expection of their child's social ability than intellectual ability. This result was in line with the conclusion suggested by other authors (Northrop, 1946; Hsu, 1972). Whereas, the result that American parents had somewhat equal expectation of their child's social ability and intellectual ability did not support the findings by other studies (Holtzman, Diaz-Guerrero, & Swartz, 1973; Kagan & Madson, 1971, 1972).

The explanation for this difference might be that the other studies only indicated that the American parents had a higher achievement expectation. They did not make a comparison of the parental expectation between social ability and intellectual ability. Therefore, the result from the present study showing that the American parents had about equal expectation of their child's social and intellectual ability could be tenable.

The limitation of this study was that the sample size was small and very restricted. The Chinese parents were highly selected. The mothers were all college graduats and the fathers were all graduate students in the United States. They were probably more westernized than their counterparts back home. Nevertheless, they still showed higher expectation relative to their child's social ability. It was, thus, evident that the cultural impact was rather deep-rooted.

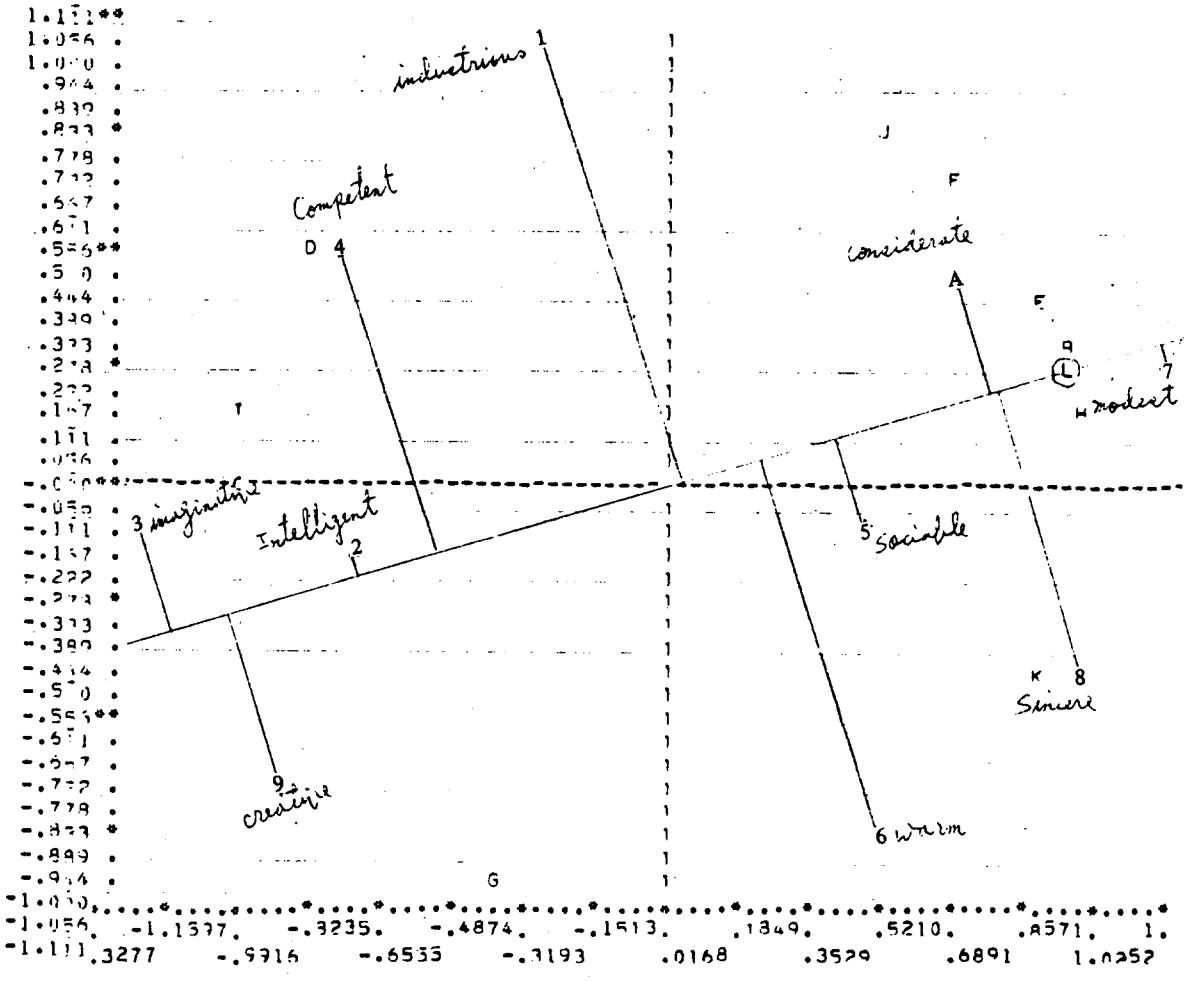
With respect to the application of MDS on cross-cultural comparison by using personality trait adjectives, especially when the grouping of these adjectives was not well defined, some limitations should be considered. One was that the semantic connotation of these adjectives might bear some subtle differences, which in turn might elicit a different response, thus produced a different configuration on the preference map. Therefore, the location of each cluster on the map was different for separate group. The different direction of each dimension will complicate the explanation of the resultant preference map. The other limitation was that MDS is

PLOT 1. IDEAL VECTOR CONFIGURATION OF CHINESE FATHER

PROJECTIONS ON THE FITTED VECTOR:

1) .04513 2) -.73702 3) -1.19446 4) -.54731 5) .40939

6) .23393 7) 1.24131 8) .81563 9) -1.07589 A) .80834

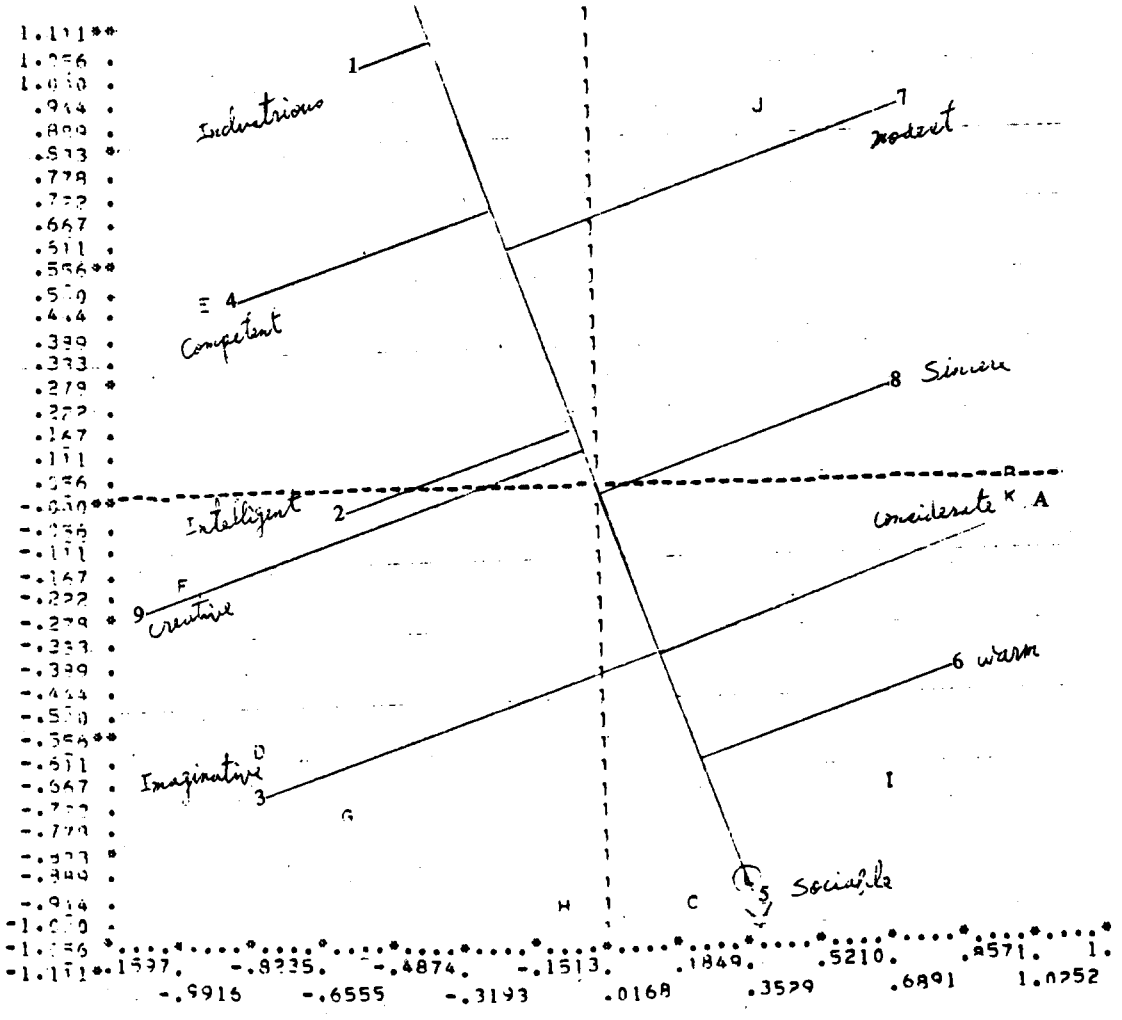


PLOT 2. IDEAL VECTOR CONFIGURATION OF CHINESE MOTHER

PROJECTIONS ON THE FITTED VECTOR:

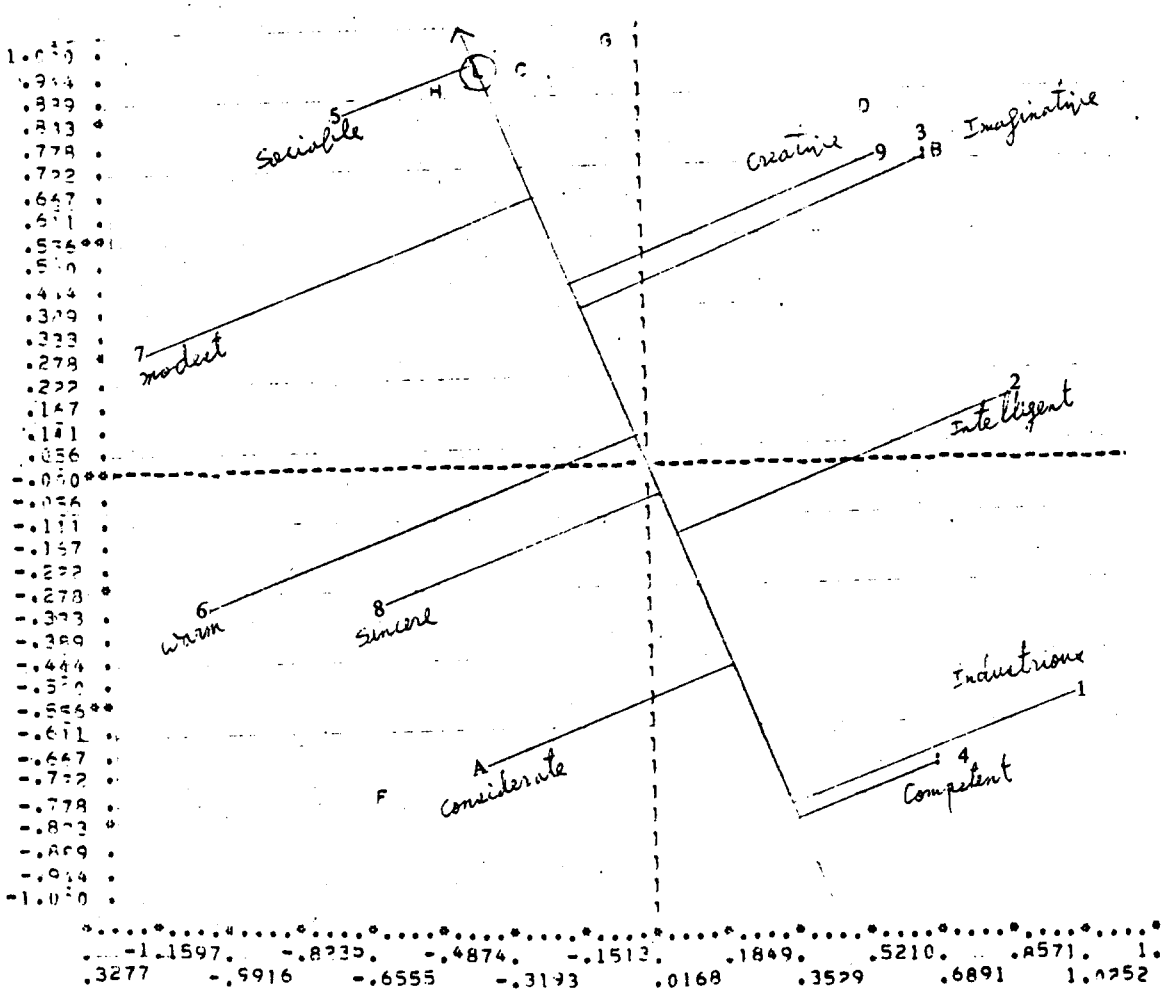
1) -1.11563 2) -.17724 3) .41940 4) -.72759 5) 1.06552

6) .74344 7) -.55575 8) .02267 9) -.11162 A) .43715



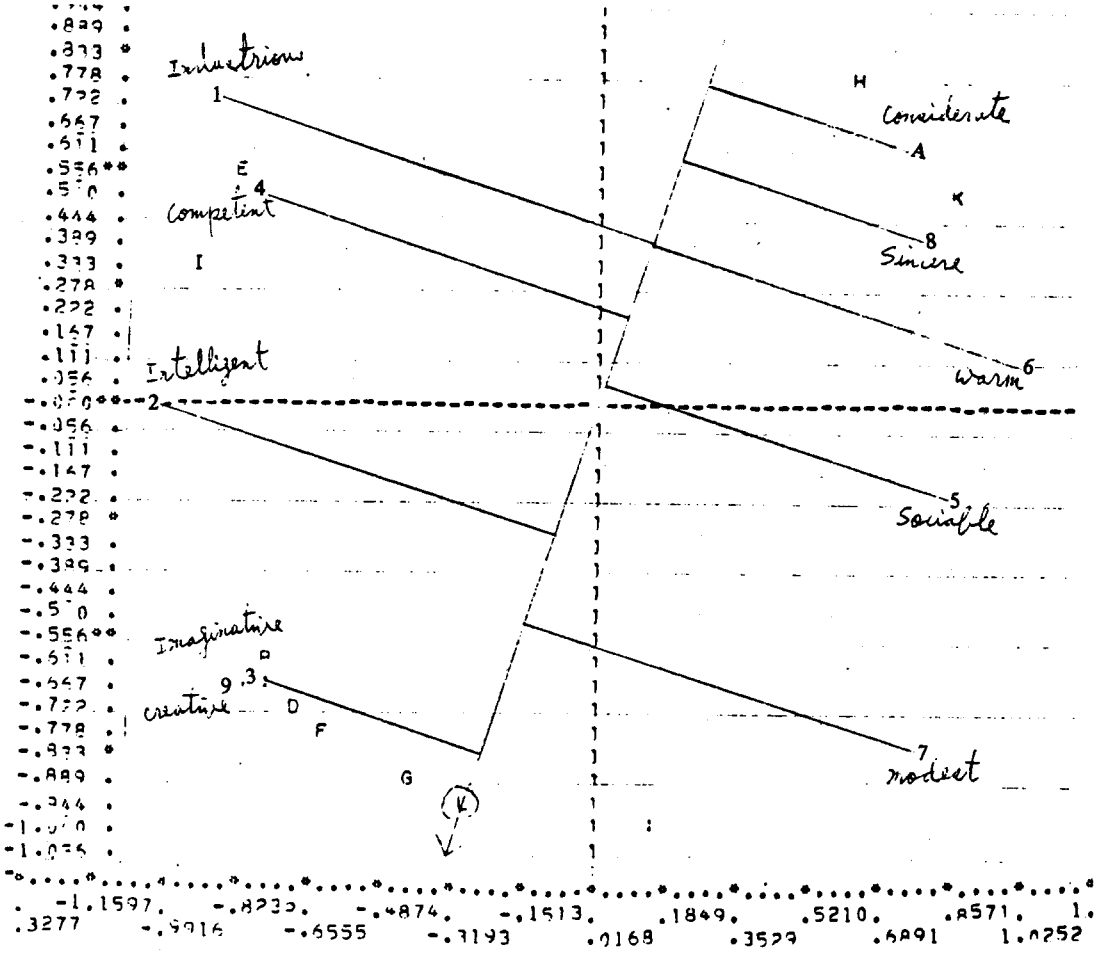
PLOT 3. IDEAL VECTOR CONFIGURATION OF AMERICAN FATHER PROJECTIONS ON THE FITTED VECTOR

1) -.88105 2) -.15221 3) .43435 4) -.94337 5) 1.00963
6) .03612 7) .66397 8) -.06950 9) .45005 A) -.54764



PLOT 4. IDEAL VECTOR CONFIGURATION OF AMERICAN MOTHER PROJECTIONS ON THE FITTED VECTOR:

1) -.43820 2) .30832 3) .83219 4) -.25631 5) -.02120
6) -.42119 7) .55331 8) -.59122 9) .83431 A) -.79903



basically a descriptive statistical technique. Therefore, to do significance test from the results of MDS often cause a serious problem to the researcher.

In this study, the Mann-Whitney U Test seemed to be a tenable solution for doing significance test. Further study using other statistical methods for the cross-cultural comparison of parental expectation between America and China was recommended to verify the results from this study.

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