GROUP EFFECTIVENESS RESEARCH LABORATORY

DEPARTMENT OF PSYCHOLOGY

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Three-Mode Factor Analysis of the Behavioral Component of Interpersonal Attitudes

Harry C. Triandis, Ledyard R. Tucker,

Ping Koo, and Thomas Stewart

University of Illinois

Technical Report No. 50 ~~(67-6)~~

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Communication, Cooperation, and Negotiation
in Culturally Heterogeneous Groups

Project Supported by the

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Under Office of Naval Research Contract NR 177-472, Nonr 1834(36)

Fred E. Fiedler, Lawrence M. Stolurow, and Harry C. Triandis
Principal Investigators

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30-DAY OCEAN-BOTTOM SEISMOGRAPH

MODIFICATION AND TESTING OF NINETEEN OCEAN-BOTTOM SEISMOGRAPHS

By

Ralph R. Guidroz, Program Manager
FL7-5411 Ext. 447

Benjamin Kimler Terence Harley G. Dale Ezell

TEXAS INSTRUMENTS INCORPORATED
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ABSTRACT

A three-mode factor analysis was computed using behavioral differential data obtained by Triandis, Tanaka, and Shanmugam (1966) from approximately 100 S's in each of three cultures: America, Japan, and India. Four factors were found for Mode I (behaviors). They were Respect, Institutionalized Marital Acceptance, Friendship Acceptance, and Affect with Submission. The four factors for Mode II (stimuli) were rotated to give factors for sex, age, occupation, and religion. There were six Mode III (subject) factors. The mean loading for each sample on each Mode III factor was computed. The core matrix shows the relationships among the three modes. Interpretation of the core matrix provided information not revealed by classic factor analysis, particularly concerning differences in "points of view" within each of the samples.

Three-Mode Factor Analysis of the Behavioral Component of Interpersonal Attitudes[1]

Harry C. Triandis, Ledyard R. Tucker,
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The Behavioral Differential (Triandis, 1964) is an instrument for the study of the behavioral component of interpersonal attitudes. It consists of a description of a person and a series of scales defined by behaviors. The S is asked to indicate his behavioral intentions towards the stimulus persons. For example, a typical item would have the following format:

A 30-year old female, Negro physician

would___:___:___:___:___:___:___:___:would not

admire the ideas of this person

would not___:___:___:___:___:___:___:___:would

hit this person

etc., etc., etc.

Utilizing such instruments, Triandis (1964) found five clusters of behavioral intentions. Formal Social Acceptance or Respect (admire, obey, vote for), Marital Acceptance (marry, date, love), Friendship Acceptance (eat with, play with, gossip with), Social Distance (exclude from the neighborhood, not

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[1]This study was supported by Contract NR 177-472, Nonr 1834(36) with the Advanced Research Projects Agency and the Office of Naval Research, to study Communication, Cooperation and Negotiation in Culturally Heterogeneous Groups (Fred E. Fiedler, Lawrence M. Stolurow, and Harry C. Triandis, Principal Investigators). We are indebted to Ankanahalli V. Shanmugam of the Agricultural University of Bangalore, Mysore State, India, and to Yasumasa Tanaka, of Gakushuin University, Tokyo, Japan for collection of the Indian and Japanese data. We are grateful to Ken Forster and Sharon Wolf for early attempts at programming of the three-mode procedure. Earl E. Davis supervised much of the data analysis in our early attempts to discover ways of computing the necessary matrices. Ping Koo, completed the programs and Thomas Stewart participated in the last phase of the analyses.

accept as kin by marriage, prohibit from voting) and Subordination (not treat as a subordinate, be commanded by, submit work for criticism of).

Triandis (1967) reviewed several studies which probed the reliability and validity of the behavioral differential and its relationship to other instruments for the measurement of interpersonal attitudes.

The basic method for the analysis of behavioral differentials was classic factor analysis. Classic factor analysis was designed to reduce a matrix of subjects by tests to a simpler form. Thus, it is applicable to data with a two-way classification. The data matrix can be factored into a product of two matrices: a factor score matrix and a factor loading matrix. However, some instruments require three or four way classifications of the data. For example, both semantic differential (Osgood, Suci, & Tannenbaum, 1957) and behavioral differential (Triandis, 1964) data are usually three-mode.

One mode consists of the concepts, another of the behavior scales, and a third of the Ss responding to the instrument. The concepts are the descriptions of the stimulus persons. The behaviors are described under the scales. The data can be placed in a cube, one side of which has the concepts, another the scales and a third the Ss. Such an instrument requires three-way classification of the data. If we sampled a series of "social settings" as well, we would have an instrument requiring a four-way classification, since the behavior would be described as occurring "in your home," "in church," "in school," "at a medical convention," etc.

In much of the work with semantic and behavioral differentials the Ss' responses to the instruments were summed, so that a matrix of concepts by scales was obtained. Then, the scales were intercorrelated using the concepts as the number of observations on each variable. This procedure gives useful results, but the information about individual differences is lost.

In previous studies of the components of interpersonal attitudes in which behavioral differentials were utilized (e.g., Triandis, 1964; 1967; Triandis & Davis, 1965; Triandis, Vassiliou, & Nassiakou, 1967) the responses of the Ss were summed and the two-way classification matrix (concepts by scales) was the starting point for the analysis. Factor analyses of the scales were then computed.

Triandis and Davis (1965), working with white American males employed a further procedure which gave information about individual differences: After the factor analysis of the scales was completed, they summed the responses of each individual which were obtained when he judged each of the stimulus persons on the three scales which had the highest loadings on each factor. Thus, a matrix of individuals by composite scores (sum of judgments of a stimulus on three scales) was obtained. This matrix was then analyzed by the Tucker and Messick (1963) two-mode factor analysis procedure, thus obtaining "subject" factors as well as "stimulus-on-scale factor" factors. This approach preserves the information about individual differences, but is not as elegant as Tucker's (1964) three-mode factor analysis.

Levin (1965) has presented three-mode factor analyses of semantic differential data. In his paper he summarized the mathematical developments of both two-mode and three-mode factor analyses, so that the reader may refer to his paper or to the original Tucker papers to find the details of these procedures. The present paper presents an application of three-mode factor analysis to behavioral differential data obtained by Triandis, Tanaka, and Shanmugam (1966) from approximately 100 Ss in each of three cultures: America (Urbana, Illinois), Japan (Tokyo) and India (Mysore). A comparison will be made between the results obtained by Triandis, Tanaka, and Shanmugam (1966) using classic factor analysis and the present results using three-mode factor analysis.

Method

Subjects

Samples of 50 male and 50 female Ss were obtained from each of the following places: Urbana, Illinois; Tokyo, Japan; and Mysore, India to participate in the study. However, testing of Indian females proved impossible, because the Behavioral Differential scales (e.g., would marry this person) sometimes included questions that were considered "inappropriate" in that culture, in the sense that "girls should not be asked such questions." Since testing of females was not possible, data were collected from two male Indian samples, so that we do, in fact, have data from about 100 Ss per culture.[2] The Ss were upperclassmen in high or secondary schools (India) or lowerclassmen in universities (America and Japan).

The Questionnaires

Nine stimulus persons were presented first: physician, carpenter, male, female, old, middle-aged, young, a person of the same religion as you, a person of a different religion. The Ss were asked to inspect a list of religions which included all common religions in their particular culture, as well as the option of "no religion," and to pick the one that they considered most different from their own. Then, they were instructed to think of that particular religion when they made their judgments of persons of a "different religion."

The above-listed nine stimuli were arranged in all possible combinations of occupation, sex, age, and religion. This is a 2x2x3x2 design which involves twenty-four complex stimuous persons. A total of thirty-five stimuli were used: nine simple, twenty-four complex, and repetitions of two complex

[2]The exact numbers of the various samples were as follows: American males, 49; females, 49. Indian males, I, 50, II, 49. Japanese males, 55; females, 57.

stimuli as a test of the reliability of the results.

Sixteen Behavioral Differential scales, selected from Triandis (1964) and translated into Kannada (India) and Japanese, constituted the Behavioral Differential part of the questionnaire. The scales may be seen in Table 1.

Analysis of the Data

The data were rescaled from a 1 to 9 scale to a -4 to +4 scale. The raw data were then treated as standard scores, and sums of cross products, rather than correlation, were used throughout the analysis. This procedure has been suggested by Tucker (1966, p. 294) and was used by Levin (1965) for semantic differential data. It is based on the assumptions that 0, the scale midpoint is a natural origin of measurement and that differences in standard deviation among subjects reflect individual differences which ought to be included in the analysis.

The data were processed by IBM 7094 computer. The method used to obtain the factor matrices for each mode and the core matrix was developed by Tucker (1966, pp. 299-301).

Number of factors: The number of factors was determined by plotting the size of the latent roots (eigenvalues). An abrupt change in the slope of this plot was used as a cue. The bending point is used as the cutting point to determine the number of factors.

Using this criterion Mode I (behavior-scales) had 4 factors; Mode II (stimulus persons) had also 4 factors; Mode III (the Ss) had 6 factors.

Relations: The principal axis factors for Mode I (behavior scales) were rotated by the Varimax method (Kaiser, 1958). The Mode II, (stimulus persons) factors were identified by comparing the mean loadings for the two poles of each of the four stimulus characteristics of sex, occupation, age, and religion. For example, if the mean loading for all male stimulus persons on Factor 1,

disregarding age, occupation, and religion, was higher than the mean loading for all female stimulus persons, then Factor 1 could be labeled a sex factor. If there is no difference between the loadings for male and female stimuli, the implication is that the sex of the stimulus person is not relevant on this factor. For each Mode II factor, the mean loading for female stimuli was subtracted from the mean loading for male stimuli. The same was done for carpenter and physician, old and young, and different religion and same religion. These differences formed a 4x4 matrix with columns for factors and rows for stimulus characteristics. The inverse of this matrix, normalized by columns, was the transformation matrix for Mode II. Under this transformation, the difference matrix is diagonal with factor 1 having a non-zero difference for sex, factor 2 for occupation, factor 3 for age, and factor 4 for religion.

The transformation matrices for Mode 1 and Mode LL were used to obtain the transformed core matrix as described by Tucker (1966, pp. 289-291). This transformed core matrix was then written as a two mode matrix with 6 columns for the factors of Mode III and 16 rows for the combinations of Mode I and Mode II factors. This form of the core matrix was rotated by Varimax and the principal axis factor matrix for Mode III (subjects) was counterrotated by multiplying by the inverse of the Varimax transformation matrix.

Results

Interpretation of factors for each mode

Mode I (behavior scales): The behavior scales with high loadings are shown in Table 1. The first factor had high loadings on the following behaviors: Would not exclude from my neighborhood; Would not marry this person; Would not treat as a subordinate; Would permit this person to do me a favor; Would admire the character of this person.

This factor is interpreted as involving RESPECT. It resembles the

Table 1

Behaviors with High Loadings for Mode I

Factor I: Respect

Would exclude from my neighborhood	-.53
Would marry	-.45
Would treat as a subordinate	-.39
Would permit to do me a favor	.29
Would admire the character of	.27

Factor 2: Institutionalized Marital Acceptance

Would marry	.61
Would accept as kin by marriage	.60

Factor 3: Friendship Acceptance

Would accept as an intimate friend	+.55
Would be partners in an athletic game with	+.43
Would teach	+.37
Would gossip with	+.37
Would believe	+.36
Would admire the ideas of	+.35
Would obey	+.29

Factor 4: Affect with Submission vs. No Affect or Submission

Would fall in love with	+.77
Would be commanded by	+.44
Would cooperate in a political campaign with	+.34
Would obey	-.30

FORMAL SOCIAL ACCEPTANCE WITH SUBORDINATION factor found by Triandis (1964) and the RESPECT factor of Triandis, Vassiliou, and Thomanek (1966). Ss often show respect for persons who are older or of the same sex, as they are, hence the loading on would not marry.

The second factor has only two high loading scales: Would marry; Would accept as kin by marriage.

This is interpreted as involving INSTITUTIONALIZED MARITAL ACCEPTANCE. It resembles the MARITAL ACCEPTANCE factor of Triandis (1964), but the absence of a substantial loading on the behavior "would love this person" gives it a definite institutional character. In cultures, such as India, where marriages are arranged, love is an event that follows (if it ever occurs) the selection of the marital partner by one's family. Such selection is determined by institutionalized marital acceptance.

The third factor is characterized by loadings on the scales indicative of FRIENDSHIP ACCEPTANCE.

The fourth factor is interpreted as involving AFFECT WITH SUBMISSION.

Mode II (Stimulus Persons): The average difference matrix of the stimulus, person mode, the derivation of which was described above, is shown in Table 2, which also shows the transformed difference matrix. Table 3 shows the transformed Mode 2 Factor Matrix. Thus, by applying these transformations, we have a Stimulus Person Mode which consists of easily interpretable stimulus characteristics. Factor I reflects the sex of the stimulus persons, with Male high, Female low; Factor II reflects the occupation of the stimulus persons, with Physician high, Carpenter low; Factor III reflects the age of the stimulus persons, with Young high and Old low; and Factor IV reflects the religion of the stimulus persons, with same religion high and different religion low.

Table 2

Average Difference and Transformed Difference Matrices for Stimulus Person Mode

Average Difference Matrix ($_rD_p$)

	I	II	III	IV
Sex (Male-Female)	-.012	.076	-.107	.022
Occ. (Physician-Carpenter)	.041	.070	.021	-.033
Age (Young-Old)	.130	.056	.060	.029
Rel. (Same-Different)	.034	.078	013	-.085

Note: $_pT_{p*}$ is the inverse of $_rD_p$, normalized columnwise, $_rD_pT_{p*} = {}_rD_{p*}$, the transformed difference matrix.[3]

Transformed Difference Matrix ($_rD_{p*}$)

	I	II	III	IV
Sex (Male-Female)	.107	.000	.000	.000
Occ. (Physician-Carpenter)	.000	.014	.000	.000
Age (Young-Old)	.000	.000	.056	.000
Rel. (Same-Different)	.000	.000	.000	.026

Note: $_jB_p$ is the Mode 2 factor matrix. $_jB_pT_{p*} = {}_jB_{p*}$, the transformed Mode 2 factor matrix.

[3]For explanation of notation, see Tucker (1966).

Table 3

Transformed Mode 2 Factor Matrix ($_jB_{p*}$)

Stimulus Number	I	II	III	IV	Stimulus Characteristics* Sex	Occ.	Age	Rel.
1	-.064	.235	-.206	-.211		P		
2	-.107	.246	-.227	-.251		C		
3	-.105	.246	-.195	-.217				S
4	-.089	.265	-.216	-.282				D
5	-.008	.261	-.229	-.234	M			
6	-.244	.285	-.218	-.280	F			
7	-.120	.277	-.297	-.261			O	
8	-.119	.245	-.260	-.216			M	
9	-.102	.239	-.171	-.213			Y	
10	-.069	.283	-.246	-.295	M	P	Y	D
11	-.030	.271	-.240	-.246	M	P	Y	S
12	-.168	.261	-.266	-.266	F	C	M	S
13	-.144	.258	-.303	-.260	M	C	O	D
14	-.142	.288	-.323	-.257	M	P	O	S
15	-.075	.265	-.270	-.251	M	C	Y	S
16	-.084	.257	-.270	-.268	M	C	Y	D
17	-.137	.270	-.313	-.254	M	C	O	S
18	-.127	.275	-.311	-.256	M	C	M	S
19	-.110	.277	-.294	-.271	M	P	M	D
20	-.179	.270	-.304	-.266	F	P	O	D
21	-.272	.281	-.267	-.241	F	P	Y	S
22	-.246	.297	-.277	-.294	F	P	Y	D
23	-.244	.266	-.273	-.267	F	C	Y	D
24	-.229	.287	-.308	-.258	F	P	M	S
25	-.153	.274	-.313	-.267	M	P	O	D
26	-.175	.262	-.311	-.230	F	P	O	S
27	-.252	.266	-.266	-.246	F	C	Y	S
28	-.206	.275	-.304	-.277	F	C	M	D
29	-.121	.272	-.303	-.231	M	P	M	S
30	-.135	.261	-.288	-.267	M	C	M	D
31	-.199	.277	-.305	-.266	F	P	M	D
32	-.151	.229	-.289	-.231	F	C	O	D
33	-.170	.253	-.312	-.233	F	C	O	S

*Sex: M = Male, F = Female; Occupation: P = Physician, C = Carpenter;

Age: O = Old, M = Middle aged, Y = Young; Religion: S = Same, D = Different.

Mode III (*Sn*). The means and standard deviations of Mode 3 are shown in Table 6. These were obtained after the counterrotations described in the Analysis section above. Table 6 shows that Subject factor I highs are mostly the Americans plus the Japanese males; factor II highs are the Japanese; factor III highs are the American females; factor IV highs are the Indian males, while IV lows tend to be the Americans; finally, factor V highs tend to be the Indians, and lows the Japanese. The sixth factor is unimportant and difficult to interpret.

The Core Matrix. Table 4 shows the counterrotated core matrix, and Table 5 the same matrix after a further Varimax rotation. The core matrix of Table 5 shows the associations between the three modes.

The top block of 4 by 4 numbers, represents the response patterns of the Ss who are high on Mode 3, Factor I. As mentioned above, these tend to be Americans of both sexes, as well as Japanese males. The Indians tend to be low on this subject-factor. Subjects high on this factor tend to show intimate acceptance of physicians of the same religion. This pattern is interpreted as being equalitarian. Thus, the Americans and also the Japanese males tend to accept physicians of the same religion to intimate relations (accept as intimate friend, fall in love with, be commanded by) (See the loadings in Table 1, for factors 3 and 4), while the Indian males and the Japanese females do not show this pattern. It is possible that for the latter two groups, the particular stimuous persons are too venerable.

The next block of numbers shows the response patterns of Japanese Ss and it is relatively rare with American Ss. It shows an over-emphasis on marital acceptance of the young physicians, and intimate acceptance of those who are young, with a de-emphasis on same religion as being important in intimate relations. It is known that the Japanese consider religion a relatively unimportant determinant of social behavior (Triandis, Davis, &

Table 4

Counterrotated Core Matrix ($_{\rho^* G_{qm}}$)

Stimuli[4] \ Behavior Factors	Resp. 1	I.M.A. 2	F.A. 3	Affect + Sub. 4
Factor 1 for Mode 3				
Sex (M)	.21	.48	.34	1.41
Occ. (P)	.29	-1.44	-1.47	-.60
Age (Y)	.38	.19	.88	.86
Rel. (S)	-.28	-1.49	-2.81	-2.04
Factor 2 for Mode 3				
Sex (M)	-.38	.39	.22	-.79
Occ. (P)	-.51	.41	1.34	-.09
Age (Y)	-.03	.81	.40	.57
Rel. (S)	-.62	-1.02	.68	.13
Factor 3 for Mode 3				
Sex (M)	-.19	.97	.51	.16
Occ. (P)	-1.49	-2.73	-3.77	-3.15
Age (Y)	.25	-1.50	-.57	-.54
Rel. (S)	-1.44	-2.09	-3.45	-2.99
Factor 4 for Mode 3				
Sex (M)	-.29	-.67	-.43	-1.95
Occ. (P)	-.64	-.06	.70	.31
Age (Y)	.05	-.93	-.72	-.42
Rel. (S)	-.10	.82	1.80	1.37

[4]The letter in parentheses indicates which stimulus characteristic loads higher on the factor.

Table 4
(Continued)

Counterrotated Core Matrix ($_{p*}G_{qm}$)

Behavior Factors		Resp.	I.M.A.	F.A.	Affect + Sub.
Stimuli		1	2	3	4
Factor 5 for Mode 3					
Sex	(M)	.35	-.38	-.28	.75
Occ.	(P)	1.65	1.45	-.45	.43
Age	(Y)	.16	1.38	.88	1.05
Rel.	(S)	1.05	1.04	-1.49	-.85
Factor 6 for Mode 3					
Sex	(M)	-.56	1.13	.42	-.20
Occ.	(P)	-1.46	-1.93	1.74	1.10
Age	(Y)	.08	-2.45	-.99	-.97
Rel.	(S)	-.83	-.42	3.01	2.10

Note 1: $_{p*}G_{qm}$ is the core matrix counterrotated for the Mode 2 transformation

$$_{p*}G_{qm} = (_pT_{p*})^{-1}\ {}_pG_{qm}$$

Note 2: The core matrix, $_{p*m}G_q$, is rotated by Varimax.

$$_{p*m}G_q\ {}_qT_{q*} = {}_{p*m}G_{q*}\ .$$

Table 5

Varimax Rotated Core Matrix

	Behavior Factors / Stimuli	Resp. 1	I.M.A. 2	F.A. 3	Affect + Sub. 4
Factor 1 for Mode 3					
	Sex (M)	-.31	-.17	-.20	-.79
	Occ. (P)	.08	1.26	4.49	3.18
	Age (Y)	-.22	-.24	-.28	-.25
	Rel. (S)	.54	1.46	5.18	4.03
Factor 2 for Mode 3					
	Sex (M)	.44	-.46	-.13	1.02
	Occ. (P)	1.93	2.19	.28	.42
	Age (Y)	.04	3.02	1.77	1.81
	Rel. (S)	.94	.06	-2.00	-1.35
Factor 3 for Mode 3					
	Sex (M)	.45	-1.65	-.88	-.60
	Occ. (P)	1.69	2.64	.50	1.14
	Age (Y)	-.16	1.33	.20	.29
	Rel. (S)	1.63	2.64	.64	.97
Factor 4 for Mode 3					
	Sex (M)	.50	.24	.16	2.20
	Occ. (P)	1.10	-.17	-.87	.45
	Age (Y)	.06	.26	.51	.21
	Rel. (S)	.68	.19	-1.51	-.80
Factor 5 for Mode 3					
	Sex (M)	.01	-.29	-.08	-.39
	Occ. (P)	.00	1.38	.83	.02
	Age (Y)	-.40	.84	-.17	-.36
	Rel. (S)	.15	.40	1.09	.70

Table 5

(Continued)

Varimax Rotated Core Matrix

Factor 6 for Mode 3	Behavior Factors / Stimuli	Resp. 1	I.M.A. 2	F.A. 3	Affect + Sub. 4
	Sex (M)	+.08	-.30	-.02	-.07
	Occ. (P)	-.21	-.47	+.00	-.03
	Age (Y)	-.00	+.00	+.09	-.02
	Rel. (S)	-.17	-.48	-.11	-.02

Note: The Mode 3 factor matrix, ${}_kC_q$, was counterrotated.

$${}_kC_q({}_qT_{q*})^{-1} = {}_kC_{q*} .$$

Table 6

Means and Standard Deviations of Mode 3 Factor Loadings

Subject Group		1	2	3	4	5	6
American Females	M	.057	-.061	.106	-.030	-.020	+.054
	s	.099	.124	.257	.073	.120	.167
American Males	M	.037	-.039	-.002	-.049	-.010	+.027
	s	.038	.058	.108	.028	.058	.044
Indian Males	M	-.029	-.020	-.001	.034	.053	+.006
	s	.045	.056	.148	.042	.060	.090
Japanese Males	M	.043	.040	-.013	-.017	-.030	+.031
	s	.051	.036	.052	.045	.106	.064
Japanese Females	M	.008	.043	-.036	-.012	-.050	+.074
	s	.115	.036	.110	.048	.260	.157

Takezawa, 1965). This pattern is also characterized by high respect for physicians and by high affect with subordination for males. Both of these tendencies are known to exist in Japan and are revealed in the emphasis on occupation as a determinant of social behavior (Triandis, Davis, & Takezawa, 1965) and the preference and obedience shown towards men rather than women.

The next block of numbers reflects the response patterns of some American females. This is characterized by high kinship acceptance of physicians of the same religion who are young females, respect for physicians of the same religion, and affect with subordination for physicians. This appears to be a kind of "feminist" point of view which separates some American females from the other samples, particularly the Japanese females.

Factors 4 and 5 represent mostly Indian males, but the first contrasts them with Americans and the second with Japanese. Thus, Factor 4 Ss have a pattern that shows admiration for power (males physicians) and de-emphasizes the importance of religion in the determination of affective bonds (it is a kind of religious tolerance pattern which is not found among Americans), while the factor 5 Ss (who are mostly Indian males and not Japanese) emphasize the importance of religion in intimate relations and show a strong preference for marital acceptance of a female physician who is young and of the same religion as they are.

Finally, factor 6 Ss are mostly females as opposed to males. However, this is a very weak and ambiguous factor and will not be interpreted.

Discussion

The results of the present study differ from those obtained by Triandis, Tanaka, and Shanmugam (1966) using traditional factor analysis in two important respects.

1. The present study obtained four behavior factors -- Respect, Institutionalized Marital Acceptance, Friendship Acceptance, and Affect with

Subordination. The previous study obtained only the first three of the above factors.

2. The present study showed the existence of different "points of view" within each of the samples. Such differences could not have been obtained in the previous study which did not employ a factor analytic model which allows the study of individual differences.

Thus, in the present study, the American females are represented by subject-factors 1 (highs), 2 (lows), 3 (highs), 4 (lows), and 6 (highs). The American males are represented by factors 1 (highs) and 4 (lows); the Indian males by factors 1 (lows), 4 (highs), and 5 (highs); the Japanese males by factors 1 (highs), 2 (highs), and 5 (lows); the Japanese females are represented by factor 2 (highs), 3 (lows), 5 (lows), and 6 (highs). Thus, each of the sexual-cultural groups has a number of different points of view. It is clear, then, that the present analytic procedure reveals differences in point of view among Ss who belong to the same culture.

To sum up, the present procedure appears to provide information which was not obtained by Triandis, Tanaka, and Shanmugam (1966) using traditional factor analytic procedures. It has, therefore, much to recommend itself in studies in which individual differences in point of view are likely to be important.

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13. ABSTRACT

A three-mode factor analysis was computed using behavioral differential data obtained by Triandis, Tanaka, and Shanmugam (1966) from approximately 100 S's in each of three cultures: America, Japan, and India. Four factors were found for Mode I (behaviors). They were Respect, Institutionalized Marital Acceptance, Friendship Acceptance, and Affect with Submission. The four factors for Mode II (stimuli) were rotated to give factors for sex, age, occupation, and religion. There were six Mode III (subject) factors. The mean loading for each sample on each Mode III factor was computed. The core matrix shows the relationships among the three modes. Interpretation of the core matrix provided information not revealed by classic factor analysis, particularly concerning difference in "points of view" within each of the samples.

14. KEY WORDS

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