Cross-Cultural Examination of the Semantic Dimensions of Body Postures

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In two studies, we examined the cross-cultural validity of the dimensional structures with which postures are judged. In Study 1, 686 Japanese subjects rated 40 posture expressions on sixteen 5-point semantic differential scale items. Subjects inferred an encoder's attitude towards oneself (i.e., the decoding subject) in hypothetical dyadic situations. A principal-component factor analysis yielded evidence for three independent dimensions resembling those proposed by Schlosberg (1954), Osgood (1966), and Williams and Sundene (1965). These three factors were named *self-fulfillment, interpersonal positiveness,* and *interpersonal consciousness.* In Study 2, 336 Japanese students again rated the 40 posture expressions on the sixteen 5-point differential items, but an attempt was made to control for the status of the hypothetical encoder. The results of this study essentially replicated those of Study 1. One interesting finding was that although we found the same factors as those found in studies conducted in the West, the order of the factors in our studies was the reverse of the order found in these previous studies. The findings are discussed in terms of proposed cultural differences in the maintenance of human relations.

Postures have been considered as an expressive medium for one's personality, and as a means of communicating certain types of information to others. Ekman (1965; Ekman & Friesen, 1967) suggested that postures could be analyzed as forms of communication and that certain postures could communicate gross types of emotions (e.g., like–dislike), as opposed to facial expressions, which can communicate specific emotions. Mehrabian (1968a, 1968b) and Mehrabian and Friar (1969) suggested that changes in postures reflect changes in one's emotional state, and that one could adopt differing postures corresponding to interpersonal constructs such as friendliness–unfriendliness and superiority–inferiority.

Mehrabian (1972) concluded that immediacy, status, and responsiveness constitute the three basic dimensional structures of nonverbal behaviors. Immediacy involves (a) emotions such as like–dislike, (b) judgments of good–bad, and (c) positive–negative appraisals of others. Status indicates ways of classifying others in terms of class or position. Responsiveness shows the degree of concern and participation towards others. These three factors are similar to dimensions obtained by other writers as well: Schlosberg's (1954) pleasure–displeasure, attention–rejection, and sleep–tension; Williams and Sundene's (1965) general evaluation, control, and activity; and Osgood's (1966) pleasantness, control, and activation.

Application of the structure proposed by Mehrabian (1972) produces two basic independent dimensions that characterize communication through postures: (a) immediacy, which gives meaning to interpersonal appraisal, and (b) relaxation, which gives clues to social status in relationships. These formulations, however, are not without limitation. For example, Cook (1971) pointed out that using still photographs as stimuli limits the obtainable content held in the stimuli (postures). There is also the fear that the information that is drawn is biased. Moreover, photographs render judgments much more difficult because they have a tendency to give artificial impressions to raters. It is also nec-

essary to examine whether judgments concerning postures are composed of these two dimensions.

Besides these methodological difficulties, questions also remain as to whether these hypotheses are pancultural; that is, are the same types of body postures and gestures performed by people in other cultures? If so, do they take on the same meanings in that culture as they do in the American culture? What would be some of the social phenomena underlying semantic differences, if they do indeed exist? Despite the evidence for cross-cultural communication of emotion through another nonverbal mode, facial expressions (see Ekman, 1982), few researchers have tried to study body postures cross-culturally. Mehrabian's (1972) formulations of the semantic dimensional structure of body postures offer a good opportunity to do so.

We designed two studies to (a) overcome some of the methodological problems encountered in previous studies on nonverbal behaviors, and (b) examine the cross-cultural validity of Mehrabian's (1972) proposed scheme for nonverbal behaviors. We created hypothetical situations that were designed to maximize the direct influence of the stimuli themselves. We used Japanese subjects in order to examine the cross-cultural differences in the semantic differential structures inferred from the hypothesized postures.

Study 1

Method

Subjects. A total of 686 Japanese subjects participated. Of these, 524 were students from Osaka University of Education, Osaka, Japan (164 male, 360 female), and the remaining 162 were male public workers ranging in age from 18 to 20.

Selection of postures. Forty posture expressions were used as stimuli and were obtained in the following manner. First, a different set of 372 students were asked to freely describe the postures that they observed in everyday life; they produced 6,941 descriptions. These descriptions were then divided into posture terms (e.g., sit with one's legs crossed) and nonposture terms (e.g., running), which produced 573 posture expressions. In addition to this, 113 expressions taken from the Iwanami Japanese Dictionary were added. These 691 expressions were presented to another set of 6 raters for inclusion in this study. The criteria for inclusion were as follows: (a) the expressions had to be taken mainly from interpersonal situations; (b) the expressions had to exist in interpersonal situations; (c) the expressions could not have occurred

when the observers were alone; and (d) the expressions had to be not too extremely difficult to imagine and thus judge. We included only expressions that 4 or more raters agreed on according to these criteria. In all, there were 75 expressions that met these criteria. Of these, we excluded the ceremonialized postures and the posture expressions difficult to imagine. When the postures were similar, either in phrasing or appearance, those expressions with more closely designated interpersonal meaning or emotional states were selected. Expressions that included two or more discrete postures were also excluded. These procedures resulted in the production of 40 posture expressions. All of the expressions were changed into their infinitive form so that the image of the posture would be easier to create. The 40 posture expressions are listed in the Appendix.

Rating scale. The rating scale used in this and the next study was composed of sixteen 5-point semantic differential scale items. Ten items were chosen from Leary's (1957) rating categories, which were regarded as pertinent to measuring both the emotional expression and the communication of the interpersonal attitudes of the encoder of the postures. The addition of 6 items from Mehrabian's (1972) semantic differential scale made a total of 16 items. These were as follows: (a) tense–relaxed, (b) dominant–submissive, (c) confident–unsure, (d) happy–sad, (e) respectful–contemptuous, (f) hopeful–despairing, (g) relieved–anxious, (h) good mood–bad mood, (i) interested–ignoring, (j) trusting–doubting, (k) friendly–hostile, (l) arrogant–humble, (m) liking–hating, (n) decided–ambivalent, (o) stubborn–flexible, and (p) calm–angry.

Procedure. The subjects were given a booklet in a group situation. One posture expression and the 16-item rating scale were printed on each page of the booklet. The instructions written on the cover page were as follows.

> Suppose you are having a talk right now with someone. While you are having this conversation the person adopts the following posture. From the posture that the person has taken judge or measure how the person is feeling right now.

They were instructed that they could imagine having this talk with anyone except a family member; no specific age, status, or sex was designated. Two things, however, were emphasized: (a) Once they selected a particular conversation partner, they could not change the person until the end; and (b) there was no continuity between the posture expressions presented. Half (343) of the subjects rated Postures 1 through 20; the remaining 343 subjects rated Postures 21 through 40. We analyzed the data by combining all 40 expressions.

Results

A product–moment correlation matrix was calculated from the ratings given by each of the subjects for the 40 posture expressions (40 × 16 ×). Using a principal-component factor analysis with iteration and varimax rotation (see Table 1), we then extracted

Table 1
Varimax Rotated Factor Matrix for Each of the Semantic Differential Scales: Study 1

Scale	Factor 1[a]	Factor 2[b]	Factor 3[c]	h^2
Tense–relaxed	−266	138	711	457
Dominant–submissive	769	007	−198	620
Confident–unsure	893	058	−120	746
Happy–sad	745	241	−172	619
Respectful–contemptuous	−131	673	116	382
Hopeful–despairing	810	291	101	672
Relieved–anxious	646	170	−442	593
Good mood–bad mood	449	505	−396	563
Interested–ignoring	161	646	148	389
Trusting–doubting	207	639	−187	433
Friendly–hostile	009	−506	541	457
Arrogant–humble	508	−171	−168	291
Liking–hating	151	718	−303	540
Decided–ambivalent	−592	−077	001	341
Stubborn–flexible	−118	−066	674	370
Calm–angry	−020	−401	402	289

Note. Decimal points are omitted. For h^2, the percentage of variance is 63.1.
[a] Eigenvalue = 5.609; percentage of variance is 35.1. [b] Eigenvalue = 2.655; percentage of variance is 16.6. [c] Eigenvalue = 1.828; percentage of variance is 11.4.

factors. Guttman squared multiple correlations were adopted as communalities. When the data were evaluated with a standard eigenvalue of 1.00 or greater, three common factors emerged. We considered those items with an absolute loading value of .40 or more as items loading highly, and we found that Factor 1 contained eight items, Factor 2 seven items, and Factor 3 five items. Factor 1 accounted for 35.1%, Factor 2 for 16.6%, and Factor 3 for 11.4% of the total variance; thus the three factors accounted for 63.1% of the total variance.

Absolute values for factors that loaded highly, as reflected in Table 1, were indicated by Gothic structures. Interpretation of these items gave us clues to the emotional state underlying each of the three factors. The items loading highly on Factor 1 were confidence–unsure, hopeful–despairing, dominant–submissive, happy–sad, relieved–anxious, decided–ambivalent, arrogant–humble, and good mood–bad mood. Because these items reflect people's inner feeling states, indicating one's self-appraisal, self-confidence, or self-extension, this factor was named the *self-fulfillment* factor (Kudoh & Nishikawa, 1984).

The items loading highly on Factor 2 were liking–hating, respectful–contemptuous, in-terested–ignoring, trusting–doubting, good mood–bad mood, calm–angry, and friendly–hostile. These items reflect an interpersonal attitude and imply whether one is friendly towards or favors a positive relation with another; it was named the *interpersonal positiveness* factor (Kudoh & Nishikawa, 1984).

The items loading highly on Factor 3 were tense–relaxed, stubborn–flexible, friendly–hostile, relieved–anxious, and calm–angry. These items indicate an interpersonal concern for others and imply whether one is conscious of others, or the degree to which one gets involved with others. This factor was called *interpersonal consciousness* (Kudoh & Nishikawa, 1984).

We examined the factor scores of each of the 40 posture expressions for each subject to identify the potential psychological dimensions underlying each of the posture expressions. The factor scores obtained with this method were the standard estimated factor scores obtained by orthogonal solution. The factor scores of each dimension were standardized to an average of 0.0; the standard deviation was 1.0. In Table 2 we indicate those posture expressions with an average factor score of over 1.0. These expressions can be thought of as those that strongly reflect the characteristics of each of the factors.

Table 2
Means of Factor Scores for Each Posture Expression: Study 1

Posture	M
Factor 1	
Throwing one's chest out	1.414
Thrusting out one's abdomen	1.073
Tossing one's body	1.058
Leaning back	0.943
Looking down	−1.103
Shrinking one's body	−1.110
Leaning forward	−1.163
Covering one's face with both hands	−1.259
Lowering one's head	−1.334
Bowing one's head	−1.346
Hanging one's head	−1.350
Drooping one's shoulders	−1.502
Factor 2	
Straightening one's back	1.500
Leaning forward	1.456
Turning one's back	−1.301
Slowly turning one's head	−1.400
Turning one's head away	−1.504
Factor 3	
Shaking a fist	1.720
Standing straight up	1.548
Squaring one's shoulders	1.397
Straightening one's back	1.143
Holding one's chin with both hands	−0.967
Holding both hands behind one's head	−1.112

Discussion

Subjects' judgments were composed of three common factors. The items loading on Factor 1, the self-fulfillment factor, indicate one's degree of internal fulfillment, self-trust, or self-confidence. These items in general also expressed an internal emotional state, whereby the self was the object. This factor resembles in part the relaxation dimension of Mehrabian's (1972) two-dimensional scheme, implying status or power relationships as communicated by the degree of relaxation, openness, or closedness of one's arms and legs, or by the extension of one's back. Postures representing self-fulfillment were found in people whose social status was high or in people who had power. We believe that this factor mainly communicates the degree of one's psychological enhancement, and does not communicate a self-representation of the degree of one's consciousness of others.

Factor 2, the interpersonal positiveness factor, implies one's interpersonal attitudes of like–dislike. This factor is comparable to Mehrabian's (1972) immediacy dimension. Mehrabian (1968a) and Mehrabian and Friar (1969) reported that postures involving one's leaning toward another person indicate a positiveness towards that person, whereas postures in which one leans away from another or in which one's back is turned indicate a dislike of that person. Results of other studies on postures indicating dislike are congruent with the findings of those studies.

Although Factors 1 and 2 are quite congruent with Mehrabian's (1972) two-dimensional scheme, the order of importance of these factors is worth noting. Factor 1 explained considerably more of the variability in the data than did Factor 2, but this order is just the reverse of what Mehrabian obtained. This reversal is understandable when one considers that Factor 1 for the Japanese sample is associated with status and power. Nakane (1970) stated that the relationships of the Japanese revolve around vertical relationships, as opposed to the horizontal relationships observed in India and the Western countries. In the Japanese society, nonverbal clues concerning status and power are considered to be much more noticeable and thus given more importance than cues concerning like–dislike judgments. Bond and Shiraishi (1974) also pointed out that in interactions between Japanese people, the status standards set between two people is a fairly important variable. This type of cultural difference is quite evident in our sample as well.

Although Mehrabian's (1972) proposal involves two dimensions, we obtained a third. Factor 3, the interpersonal consciousness factor, implies a response trend to other people. According to Henley (1977), postures such as holding both hands behind one's head, though relaxed postures, are at the same time signals that communicate dominance. Morris (1977) stated that postures such as holding one's chin with both hands signal a request for comfort from others, which indicates one's own uneasiness or weariness. Consequently this factor has strong interpersonal implications, unlike the self-fulfillment factor. At the same time this factor seems to depend on the characteristics of the particular situations in which the postures are adopted. Thus we interpret Mehrabian's (1972) relaxation dimension to comprise two separate factors for

the Japanese: Factor 1, which is relatively independent of the qualities of the situation, and Factor 3, which is dependent on the qualities of the situation. Considered methodologically, the postures that Mehrabian observed were very limited because the contextual information given along with the postures were largely not examined.

One limitation of Study 1 was that we did not control for the status, age, or sex of the hypothesized encoder. Given the importance of status to interpersonal relationships in the Japanese society, as evidenced in the reversal of Factors 1 and 2, investigation of the interpersonal attitudes thought to be held by encoders with differing demographic variables is warranted. As an extension of Study 1, we performed Study 2, introducing the status of the hypothesized encoder as an independent variable.

Study 2

Method

Subjects. A total of 336 Japanese subjects participated; all were university students. Of these, 164 were male.

Materials. The 40 posture expressions and the 5-point rating scale containing 16 items were exactly the same ones used in Study 1.

Procedures. The subjects were again given a booklet in a group situation. One posture expression and the 16-item rating scale printed on each page of the booklet. The instructions written on the cover page were as follows:

Suppose you are having a talk right now with someone. Also suppose that this person is older than you, and is a professional worker. While you are having a conversation this person adopts the following posture. From the posture that the person has taken judge or measure how the person is feeling right now.

They were instructed that as long as the other person was not a family member, they could imagine having this talk with any person that met these requirements. Also, no specific sex was designated. As in Study 1, two things were emphasized: (a) Once they selected a particular conversation partner, they could not select another person instead until the end; and (b) there was no continuity between the posture expressions presented.

Results

As in Study 1, we extracted factors by using a principal-component factor analysis with iteration and varimax rotation. According to a standard eigenvalue of 1.00 or more, three common factors emerged from the data,

as in Study 1. According to the criteria established in Study 1, we found that Factor 1 contained eight items, Factor 2 six items, and Factor 3 seven items. Factor 1 accounted for 35.3%, Factor 2 for 19.2%, and Factor 3 for 9.6% of the total variance; thus the three factors accounted for 64.2% of the total variance.

The items loading highly on Factor 1 were confident–unsure, hopeful–despairing, dominant–submissive, happy–sad, decided–ambivalent, relieved–anxious, arrogant–humble, and good mood–bad mood. As in Study 1, these items reflect people's inner feeling states, and indicate one's self-appraisal, self-confidence, or self-extension. This finding is similar to the self-fulfillment factor obtained by Kudoh and Nishikawa (1984) and in Study 1.

The items loading highly on Factor 2 were liking–hating, interested–ignoring, respectful–contemptuous, trusting–doubting, friendly–hostile, and good mood–bad mood. These items reflect an interpersonal attitude, and are congruent with the interpersonal positiveness factor obtained by Kudoh and Nishikawa (1984) and in Study 1.

The items loading highly on Factor 3 were stubborn–flexible, tense–relaxed, friendly–hostile, relieved–anxious, good mood–bad mood, liking–hating, and calm–angry. The items of this third factor were again congruent with the interpersonal consciousness factor obtained by Kudoh and Nishikawa (1984) and in Study 1. The results from Study 2 therefore indicate that the same factors as obtained in Study 1 survived after the introduction of status as an independent variable in this study.

We again examined the factor scores of each of the 40 posture expressions by standardizing each of the factor scores of each dimension to an average of 0.0; the standard deviation was 1.0. These factor scores were the least squares factor matrix scores obtained by the orthogonal solution. The posture expressions found to be characteristic of the different factors are given in Table 3.

General Discussion

The results of these two studies indicate that in Japan, as in the U.S., postures communicate particular meanings according to

Table 3

Means of Factor Scores for Each Posture Expression: Study 2

Posture	M
Factor 1	
Tossing one's body	1.314
Throwing one's chest out	1.237
Leaning back	1.011
Shrinking one's body	−1.010
Hanging one's head	−1.063
Covering one's face with both hands	−1.136
Drooping one's shoulders	−1.273
Bowing one's head	−1.398
Factor 2	
Leaning forward	1.646
Straightening one's back	1.395
Turning one's back	−1.435
Slowly turning one's head	−1.497
Turning one's head away	−1.556
Factor 3	
Standing straight up	1.496
Shaking a fist	1.431
Raising one's shoulders	1.316
Straightening one's back	0.980
Holding one's chin with both hands	−0.970
Widening both hands	−0.970
Sitting deeply in one's chair	−0.999
Holding both hands behind one's head	−1.220

the combination of each of the important components that compose them. Although the amount of variance explained by Factor 2 increased from Study 1 to Study 2 and decreased for Factor 3, the three obtained factors were similar in both studies. Their order, moreover, was not changed. Also, the obtained factors were roughly equivalent to those postulated by earlier writers in the U.S. (Mehrabian, 1972), although there were some interesting differences. For example, in both Study 1 and Study 2 the order of the extracted factors was opposite to that obtained previously in Western countries. This difference is related to the fact that the social relationships of the Japanese revolve around vertical relationships, whereas those of people in the U.S. revolve around horizontal relationships. In the vertical relationship, judgments of status and power are more primary than judgments of like–dislike.

The cultural difference produced by the vertical relationships of the Japanese may also explain the simplicity of the postures that communicate interpersonal positiveness. In both studies there were fewer posture expressions characterizing the interpersonal positiveness factor as compared with other factors, and the postures constituting this factor were simple. Bond and Shiraishi (1974) suggested that the number of behaviors that the Japanese exhibit are scarce compared with the many gestures used by Westerners. For example, although opened hands and arms, which imply accessibility in the Western countries, gave rise to the many variations that can be seen in the gesture system, such as shrugging one's shoulders, this system of behaviors is not observed in Japanese culture. Within cultures whose members rely on vertical relationships for the maintenance of bonds between people, clues associated with status and power rather than the nonverbal clues concerning like–dislike are more heavily relied on, which contributes to the simplicity of these postures.

These findings lend support for the notion that many of the postures that people adopt in normal human interaction can carry information about not only the emotional state of but also the relationship between the interactants. In future research concerning the cross-cultural expression of emotional state through nonverbal behaviors such as body postures, decoders should be requested to judge the behaviors of people of other nations, in an attempt to determine whether the inferences that one draws about emotional state change with the nationality of the encoder. Previous research on facial expressions of emotion has demonstrated that phenomena called *display rules* account for many of the cultural differences observed in the expression of emotion (Ekman, 1972). Further research is necessary to discover whether rules of these sorts are operable for other modes of nonverbal expression, such as through body postures.

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