CULTURAL SIMILARITIES AND DIFFERENCES IN THE SEMANTIC DIMENSIONS OF BODY POSTURES

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ABSTRACT: We report two studies that examine how differences in social structure between the American and Japanese cultures manifest themselves in differences in the interpretation of body postures. In Study 1, 145 American undergraduates rated 37 posture expressions, using Kudoh and Matsumoto's (1985) semantic differential rating scale. In Study 2, 148 American undergraduates and 150 Japanese undergraduates rated 37 posture expressions, using Mehrabian's (1972) semantic differential rating scale. Factor analysis of the data from both studies indicated a reversal of the primary factors used by the cultures to interpret postures. For the Japanese, judgments were primarily influenced by issues concerning status and power; for the Americans, ratings were primarily influenced by interpersonal responsiveness issues, such as like-dislike judgments. There were also differences in the types of postures indicative of the different factors between the Americans and the Japanese, which were also related to differences in social structure. These differences were discussed in terms of the vertical-horizontal conceptualization of social structure offered by Nakane (1970).

A number of studies has documented the ability of postures to convey different types of information in interpersonal situations (Ekman, 1965; Ekman & Friesen, 1967; Mehrabian, 1968a, 1968b, 1972; Mehrabian & Friar, 1969; Scheflen, 1964, 1972). With few exceptions, however, cross-cultural research on nonverbal behaviors continue to focus on facial expressions. Documenting differences in the interpretation of other non-

verbal behaviors, such as postures, may give important cues to the psycho-logical dimensions underlying social functioning in different cultures.

This is especially true when examining differences between the American and Japanese cultures. When American-Japanese differences are documented, these differences are almost invariably explained by the importance of status in the Japanese culture (e.g., Bond, Nakazato, & Shiraishi, 1975; Bond & Shiraishi, 1974; Kudoh & Matsumoto, 1985; Matsumoto & Kishimoto, 1983). In the vertical Japanese society (cf., Nakane, 1970), clues concerning status and power become primary, as opposed to Western societies such as the US. Bond et al. (1975), for example, suggested that the relative prominence of extroversion in their sample of Japanese judgments was related to the fact that the most salient behavioral indicator of people's relative status is their level of extroversion. Matsumoto and Kishimoto (1983) suggested that status as an organizing variable may contribute to cross-cultural differences in perception of emotion in facial expressions in children as young as 3 or 4-years-old.

Theoretically, the concept of status as an organizing variable may be associated with a particular pattern of certain stable dimensions of cultural variability. Hofstede (1980) suggests that there are are four such dimensions: Power distance, Uncertainty avoidance, Individualism, and Masculinity. Power distance reflects the way in which interpersonal relationships form and develop when differences in power are perceived. Uncertainty avoidance reflects the degree to which people in a culture feel threatened by ambiguous situations and have created beliefs and institutions that help to avoid them. Individualism is a major dimension of cultural variability postulated by other theorists as well (Kluckhohn & Strodtbeck, 1961; Marsella, DeVos, & Hsu, 1985; Parsons & Shils, 1951; Triandis, 1986). Individual cultures emphasize individual goals and independence, while collectivistic cultures stress collective goals and dependence on groups. Masculinity reflects the degree to which cultures delineate sex roles, with masculine cultures making clearer differentiations between genders.

In the Japanese culture, the importance of status can be understood in terms of high scores on Power distance and Masculinity, and a low score on Individualism. This profile is what one would expect in a culture where status, power, and hierarchical differences are central to social functioning. The US, however, is characterized by low scores on Power distance and Masculinity, and a high score on Individualism. This profile deemphasizes vertical and hierarchical differences among individuals.

Differences in the cultural profiles associated with status can influence the interpretation of all nonverbal behaviors, providing for interesting cross-cultural differences in social behavior. With respect to postures, the

status relationship between two interactants can be a primary dimension through which the semantic dimensions of each other's postures are interpreted. Thus one would hypothesize that dimensions associated with status would be more primary or of more importance in the Japanese culture than the American culture, when the semantic meaning of postures is interpreted. Also, the status relationship may influence one's own postures, not only in terms of the postures that people assume in interaction, but how they interpret their own postures.

Partial support for the first hypothesis was obtained in a recent cross-cultural study by Kudoh and Matsumoto (1985). These researchers obtained Japanese subjects' semantic differential scale judgments to verbal descriptions of 40 different postures. They reported that three dimensions accurately characterized the semantic meanings of body postures: *self-fulfillment*, reflecting the degree of internal fulfillment or self-confidence that is relatively independent of the interpersonal context; *interpersonal positiveness*, implying interpersonal attitudes of like-dislike; and *interpersonal consciousness*, implying degree of concern or involvement with others. The order of these factors was different from what has been found previously in studies involving American subjects (e.g., Mehrabian, 1972). That is, self-fulfillment, which corresponds to Mehrabian's (1972) relaxation dimension, emerged as Factor I, and interpersonal positiveness, which corresponds to Mehrabian's (1972) immediacy dimension, emerged as Factor II. Kudoh and Matsumoto (1985) interpreted this order difference as reflecting differences in the importance of clues concerning status and power between Japan and the US.

Since Kudoh and Matsumoto's (1985) study did not include an American sample, two major issues were left unanswered. First, a direct comparison of the factor order with the US could not be made using the same posture stimuli and rating scales; thus it is impossible to know for sure whether differences in the importance of status between the two cultures resulted in differences in the factor structures underlying the judgments, or the postures representative of the factors. Second, since Kudoh and Matsumoto's (1985) study asked subjects to judge someone else's postures, it is impossible to know how status as an organizing variable influences one's own postures, and the interpretation of one's own postures.

We report below two studies designed to address these two issues. In Study 1, we used the same methodology reported by Kudoh and Matsumoto (1985) in obtaining semantic differential judgments of verbal posture expressions from an American sample. We hypothesized that the same three factors would emerge from the data, but the order of the factors, as determined by the eigenvalues of each of the factors, would be different

for the US sample. We also hypothesized that the postures representative of the factors would differ between the cultures. In Study 2, Japanese and American subjects were asked to judge *their own* postures assumed in an interpersonal situation, using Mehrabian's (1972) semantic differential. We hypothesized that differences between the cultures would again appear in the order of the factors obtained, implicating the differential role of status in the two cultures. We also hypothesized that the postures indicative of the factors would differ, indicating differences in how subjects of the two cultures express their emotional states.

Study 1

Method

Subjects. Subjects were 145 undergraduates at the University of California, Berkeley, participating in partial fulfillment of class requirements. Of these, 69 were male and 76 were female.

Posture expressions. The posture expressions were exactly the same as those used in Kudoh and Matsumoto (1985). In that study, 40 posture expressions were chosen from a larger set of 691 possibilities generated by a separate group of 372 Japanese judges. Details concerning the selection criteria and procedures are reported in Kudoh and Matsumoto (1985). The 40 posture expressions were translated into English, and the translation accuracy was checked by a back-translation procedure. Three posture expressions were dropped from the original set of 40 because the English expressions were awkward; thus, a total of 37 posture expressions were used in this study.

In using the same posture expressions that were generated in Japan, we assumed that the postures are indicative of an "etic"—that is, that they describe universal behaviors interpretable across cultures. While the posture expressions were generated in Japan (see Kudoh & Matsumoto, 1985), they include a sufficiently wide range of behaviors that would preclude the use of a small set of culture-specific behaviors (see Kudoh & Matsumoto, 1985). The posture expressions are easily interpretable in the US as well, and none of the subjects in this study or the next had a problem in imagining the postures from the expressions.

Rating scale. The rating scale used in this study was exactly the same as that used in Kudoh and Matsumoto (1985). The scale was composed of 16 5-point items. Ten items were chosen from Leary's (1957) rating scale, as they were considered pertinent to measuring both the emotional expression and the interpersonal attitudes of the encoder of the postures. In addition, 6 items from Mehrabian's (1972) semantic differential scale were added. The 16 scale items were (a) tense-relaxed; (b) dominant-submissive; (c) confident-unsure; (d) happy-sad; (e) respect-ful-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; (p) calm-angry.

Procedures. All subjects were tested in groups. The posture expressions and rating scale were combined into a booklet, with one posture expression and the 16-item rating scale printed on each page. Subjects were instructed to imagine having a conversation with someone, and that during the course of the conversation, the person adopts the posture depicted in each expression. Subjects were requested to judge how the other person is feeling, given the posture that the partner has taken. They were told that they could imagine having this conversation with anyone except a family member; no specific age, sex, or status was designated. Two things were emphasized: (a) Once they selected a particular conversation partner, they could not change the person; and (b) there was no continuity between the posture expressions presented. Subjects were allowed to work through the booklet at a pace comfortable for them, and were done when they completed ratings on all 37 postures.

Results

A product moment correlation matrix was calculated from the ratings given by each of the subjects for the 37 posture expressions ($37 \times 16 \times 145$). Factors were extracted using a principal components factor analysis with iteration and varimax rotation. Guttman squared multiple correlations were used as communality estimates. When the data were evaluated with a standard eigenvalue of 1.00 or greater, three factors emerged. We considered those factors with an absolute factor loading value of .50 or greater as items loading highly. Using this criterion, Factor I contained 7 items, Factor II 6 items, and Factor III 4 items. Factor I accounted for 39.1% of the total variance, Factor II for 22.3%, and Factor III for 8.0%; the three factors together accounted for 69.5% of the total variance.

The individual scale items loading on Factor I were respectful-contemptuous, hopeful-despairing, good mood-bad mood, interested-ignoring, trusting-doubting, friendly-hostile, and liking-hating. These items correspond almost exactly with the items found for Factor II in Kudoh and Matsumoto's (1985) study, *interpersonal positiveness* (Table 1). These items reflected interpersonal attitudes, implying the degree of favor or positiveness towards others, rather than one's own inner states.

The individual scale items loading on Factor II were dominant-submissive, confident-unsure, happy-sad, arrogant-humble, decided-ambivalent, and stubborn-flexible. These items correspond almost exactly with the items loading on Factor I reported in Kudoh and Matsumoto (1985), *self-fulfillment*. These items indicated people's inner feeling states reflect-

TABLE 1

Comparison of Factor Structures Obtained in This Study and Kudoh and Matsumoto (1985)

	This Study (American)	Kudoh and Matsumoto (1985) (Japanese)
Factor 1		
	Respectful-contemptuous	Dominant-submissive
	Hopeful-despairing	Confident-unsure
	Good mood-bad mood	Happy-sad
	Interestd-ignoring	Hopeful-despairing
	Trusting-doubting	Relieved-anxious
	Friendly-hostile	Arrogant-humble
	Liking-hating	Decided-ambivalent
Factor 2		
	Dominant-submissive	Respectful-contemptuous
	Confident-unsure	Good mood-bad mood
	Happy-sad	Interested-ignoring
	Arrogant-humble	Trusting-doubting
	Decided-ambivalent	Friendly-hostile
	Stubborn-flexible	Liking-hating
Factor 3		
	Tense-relaxed	Tense-relaxed
	Relieved-anxious	Relieved-anxious
	Good mood-bad mood	Friendly-hostile
	Calm-angry	Stubborn-flexible
		Calm-angry

ing self-appraisal or self-confidence, unlike the interpersonal attitudes of the items above.

The items loading on Factor III were tense-relaxed, relieved-anxious, good mood-bad mood, and calm-angry. These items indicated a degree of concern for or involvement with others, and corresponds nicely with Factor III found by Kudoh and Matsumoto (1985), labelled *interpersonal consciousness*.

Coefficients of congruence (Harman, 1960) were calculated in order to obtain a numerical index of the degree of overlap between the factors

found in this study and Kudoh and Matsumoto's (1985). The results confirmed that Factor I in this study is essentially the same as Factor II in Kudoh and Matsumoto's (1985) study, and that Factor II was the same as their Factor I (coefficients = .973 and .915, respectively); Factor III was basically the same for both studies (.944).

The standard estimated factor scores obtained by orthogonal solution for each posture expression were also examined, in order to identify the psychological dimensions underlying each of the postures. The factor

TABLE 2

Comparison of Posture Expressions Loading Highly with Those of Kudoh and Matsumoto (1985)

This Study	Kudoh and Matsumoto (1985)
Interpersonal Positiveness	
Drooping one's head	Straightening one's back
Leaning Forward	Leaning forward
Turning one's back	Turning One's Back
Covering one's ears	Slowly turning one's head
Sitting at the tip of chair	Turning one's head away
Self-Fulfillment	
Drooping one's shoulders	Drooping one's shoulders
Shrinking one's body	Shrinking one's body
Covering one's face	Covering one's face
Drooping one's head	Drooping one's head
Sticking out one's chin	Throwing out one's abdomen
Throwing one's chest out	Throwing one's chest out
Drawing oneself up	Tossing one's body
Making a fist	Leaning forward
	Lowering one's head
	Bowing one's head
Interpersonal Consciousness	
Leaning backwards	Standing straight up
Covering one's face	Squaring one's shoulders
Clasping hands behind head	Clasping hands behind head
Making a fist	Making a fist
Sitting deeply in chair	Straightening one's back
Sitting at the tip of chair	

scores of each dimension were standardized to a mean of 0.0 and standard deviation of 1.00. We considered posture expressions with an average factor score of greater than or equal to 1.0 as postures representative of the factor (Table 2, left column). Comparison of the posture expressions loading highly in this study with those of Kudoh and Matsumoto's (1985) suggests some degree of difference in the types of postures indicative of each of the dimensions.

Discussion

Differences in the order of the factors for the American subjects when compared to previous Japanese subjects provides evidence for the differential effects of the importance of status as an organizing variable in the two cultures. Judgments of status and power, as exemplified in the Self-fulfillment factor, become more primary in social relationships in the vertical Japanese society. In the US and other Western cultures, where social interactions revolve around horizontal relationships, judgments of like-dislike, as exemplified by the interpersonal positiveness factor, become more primary.

The differential importance of status between the two cultures also affected the types of postures typical of each of the three dimensions for both cultures. In general, it appeared that postures indicative of all three dimensions unique to Kudoh and Matsumoto's (1985) Japanese sample were behavioral markers of the status relationships between interactants. Postures such as leaning forward and lowering and bowing one's head for the self-fulfillment factor for the Japanese sample are typical examples. The postures indicative of the dimensions for the American sample, however, seemed to be organized around issues of interpersonal positiveness, or like-dislike judgments.

The above data provide strong evidence that differences in social relationships between the two cultures, as exemplified by status, affects not only how one interprets other people's postures, but also the postures believed to be indicative of the underlying dimensions of judgment. Study 2 was conducted in order to examine whether differences between the two cultures would also be found in the dimensions underlying the interpretation of one's own postures, as well as the postures believed indicative of those dimensions. In this study, Mehrabian's (1972) semantic differential scale was used, as it allowed for an examination of these differences on another, more standardized, response scale.

Study 2

Method

Subjects. A total of 148 students from the University of California, Berkeley, served as the American sample; the Japanese sample consisted of 150 undergraduates from the Osaka University of Education. All subjects participated in partial fulfillment of class requirements. Of the 148 Americans, 65 were male and 83 were female; of the 150 Japanese, 75 were male and 75 were female.

Posture stimuli. The posture stimuli were the 37 posture expressions used in Study 1.

Rating scale. The rating scale used was Mehrabian's (1972) semantic differential rating scale. The scale consists of 18 items designed to assess three independent dimensions (6 items per dimension): pleasure, arousal, and dominance. The scale was translated into Japanese, and the translation accuracy was verified using a back-translation procedure. Five items from the scale were dropped because the Japanese translations were either awkward or difficult to interpret. The final list of 13 items used for both American and Japanese subjects was: (a) happy-unhappy; (b) pleased-annoyed; (c) satisfied-unsatisfied; (d) hopeful-despairing; (e) stimulated-relaxed; (f) excited-calm; (g) frenzied-sluggish; (h) jittery-dull; (i) wide-awake-sleepy; (j) controlling-controlled; (k) influential-influenced; (l) dominant-submissive; (m) autonomous-guided.

Procedures. The procedures were basically similar to those of Study 1 and Kudoh and Matsumoto (1985). All subjects were tested in groups. The posture expressions and rating scale were combined into a booklet, with one posture expression and the 13-item rating scale printed on each page. Subjects were instructed to imagine having a conversation with someone, and that during the course of the conversation, they (rather than their partner) adopted the posture depicted in each expression. Subjects were requested to use the rating scale to judge how they would feel, given the posture that they adopted. Again they were told that they could imagine having this conversation with anyone except a family member; no specific age, sex, or status was designated. Two things were emphasized: (a) Once they selected a particular conversation partner, they could not change the person; and (b) there was no continuity between the posture expressions presented. Subjects were allowed to work through the booklet at a pace comfortable for them, and were done when they completed ratings on all 37 postures.

Results

Two separate factor analyses were performed, one for the American data, and one for the Japanese data. A product moment correlation matrix was

calculated from the ratings given by each of the subjects in both cultures for the 37 posture expressions. Factors were extracted using a principal components analysis with iteration and varimax rotation. Guttman squared multiple correlations were used as communality estimates.

For the American data, the items loading on Factor I were stimulated-relaxed, excited-calm, frenzied-sluggish, jittery-dull, and wide-awake-sleepy. These items corresponded to the arousal dimension, and accounted for 52.6% of the total variance. The items loading on Factor II were happy-unhappy, pleased-annoyed, satisfied-unsatisfied, and hopeful-despairing. These items corresponded to the pleasure dimension, and accounted for 19.4% of the variance. The items loading on Factor III were controlling-controlled, influential-influenced, dominant-submissive, and automonous-guided. These items corresponded to the dominance dimension, and accounted for 11.5% of the variance.

The Japanese data indicated a reversal of Factors I and II. The items loading on Factor I were happy-unhappy, pleased-annoyed, satisfied-unsatisfied, and hopeful-despairing. These items corresponded to the pleasure dimension, and accounted for 35.7% of the variance. The items loading on Factor II were stimulated-relaxed, excited-calm, frenzied-sluggish, jittery-dull, and wide-awake-sleepy. These items corresponded to the arousal dimension, and accounted for 23.6% of the variance. Finally, the items loading on Factor III were controlling-controlled, influential-influenced, dominant-submissive, and autonomous-guided. These items corresponded to the dominance dimension, and accounted for 15.4% of the variance.

Coefficients of congruence (Harman, 1960) were again computed, to derive a numerical index of the degree of association between the factors obtained for both cultures. Factors I and II for the American sample were again almost perfectly associated with Factors II and I for the Japanese, respectively (coefficients of congruence = .983 and .983). Factor III was the same for both cultures (.980).

Two characteristics of these data are worth noting: (a) the factor loadings for the items assessing each dimension were high ($> .70$), indicating that the scale items were providing valid assessments of each of the three dimensions with little overlap; and (b) the American-Japanese cultural difference in the percent of variance accounted for by the first two factors was quite large: pleasure accounted for 35.7% of the variance for Japanese subjects, but only 19.4% for the Americans; arousal accounted for 52.6% of the variance for Americans, but only 23.6% for the Japanese.

In order to identify the postures indicative of each of the factors for both cultures, we examined the factor scores of each of the 37 posture

TABLE 3

Posture Expressions Representative of Each of the Factors

American	Japanese
Arousal	
Drooping one's shoulders	Raising one's shoulders
Making a fist	Leaning forward
Sitting deeply in chair	Making a fist
Sitting at the tip of chair	Holding one's chin
	Sitting deeply in chair
Pleasure	
Turning one's back	Holding one's head
Covering one's ears	Leaning forward
Making a fist	Throwing one's head to rear
	Throwing one's chest out
	Covering one's ears
	Spreading both arms to side
Dominance	
Shrinking one's body	Shrinking one's body
	Leaning backwards
	Drooping one's head

expressions for each culture separately. The factor scores evaluated were the standard estimated factor scores obtained by orthogonal solution. These scores were standardized to a mean of 0.0 and standard deviation of 1.00. In Table 3 we list the posture expressions with an average factor score of greater than or equal to 1.0 for both the American and Japanese data. Again, there are substantial differences in the types of postures that exemplify each of the three dimensions for both the Americans and the Japanese.

Discussion

Differences in the order of the first two factors between the two cultures in Study 2 again provide evidence for the differential effects of the importance of status as an organizing variable. The Pleasure factor is closely

related to the Self-Fulfillment Factor of Study 1, and both factors are indi-cative of an internal emotional state, implicating the importance of statu, or power relationships in the Japanese society, as predicted.

The similarity between the Arousal dimension of Study 2 and the Interpersonal Positiveness factor of Study 1 is more difficult to interpret, given the apparent disparity of the individual items of the scales. Inspec-tion of the individual items comprising these scales suggests that the comparison is difficult because Mehrabian's (1972) Arousal dimension does not include items assessing the *interpersonal* nature of the arousal. If we allow these items to typify arousal as a function of interpersonal responsiveness, then the data suggest an accurate reversal of the factors for the Americans and the Japanese: like-dislike type judgments are more primary for American subjects than for the Japanese subjects. Again, these differences can be related to differences in the social structures between the two cultures, with like-dislike type judgments being more primary in horizontal Western cultures, as opposed to vertical cultures such as Japan and India.

While the dominance factor was third for both samples and accounted for the least variance, it is important not to equate the importance of status with this single factor. The importance of status is reflected by a particular profile of cultural variability, which includes high degrees of Power dis-tance and Masculinity, and low Individualism in the case of the Japanese (Hofstede, 1980). This profile allows for cultural differences to be observed across multiple dimensions, rather than a single one (dominance). The results from the two studies reported above suggest that status differences can affect not only direct judgments of dominance, but also other social judgments, such as of one's own internal state (Self-Fulfillment) and inter personal relations (Interpersonal Positiveness).

Examination of the posture expressions typical of each of the factors for Study 2 was difficult, because the number of expressions loading highly on each of the three factors was small; thus these data need to be repli-cated. Nevertheless, some interesting differences between the cultures were implicated, again providing evidence for the differential effects of social structures, and the importance of status in the Japanese culture. For the most part, the expressions typical of the factors for the Japanese sample (e.g., throwing one's chest out, spreading both arms to the sides) are indic-ative of the postures assumed by people with high social status and power. The postures typical of the factors for the American sample, however, involved more of an orientation or forward-backward lean, indicating degree of positiveness toward the other person.

An argument could be made that differences in the order of factors

between the two cultures in both studies 1 and 2 should not be attributed to predicted societal differences; that is, the size of the eigenvalues for the factors between cultures are unimportant, given orthogonal rotation, and that differences in the order of the factors may be attributed to characteristics of either the subjects, the rating scale, or the posture expressions used as stimuli to bias ratings of one or more factors in either culture. We argue against this interpretation, however. Prior to the two studies reported here, two separate studies using four different sets of Japanese judges documented the order of the factors in Japan (Kudoh & Matsumoto, 1985; Kudoh & Nishikawa, 1984). Further, previous factor analytic work also indicates similar structures for the American subjects: 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. Finally, very sizable differences in the eigenvalues for the same factors were found in Study 2, which would be difficult to attribute to methodology.

It may be possible that the observed factor differences are due to differences in the imagined interactants between the two cultures. That is, if status is indeed an influential organizing variable, the Japanese may have selected a different imagined other than the Americans, and the obtained differences in the factor loadings might be better attributed to that selection. We argue against this possibility, however, because it is unlikely that the participants would systematically choose interactants of different status. Also, the same factor patterns were observed in two previous studies that specifically requested subjects to imagine others of a higher status (Kudoh & Matsumoto, 1985; Kudoh & Nishikawa, 1984).

Future studies may begin to examine how social differences, particularly around issues of status and power for the Japanese culture, manifest themselves in the interpretation of other nonverbal behaviors. Other questions need to be asked, in order to broaden the scope and generalizability of these studies. On one hand, for example, questions can be raised concerning whether the cultural differences exist beyond ratings of verbal descriptions of postures. Here, sketches, photos, or videos of live interaction would increase generalizability tremendously. On the other hand, we may ask how people's behaviors are influenced as a function of the differences in the way they interpret the postures. These types of studies may ultimately lead to more tests of the concept of vertical and horizontal culture, and perhaps to further refinements of this conceptualization of culture.

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