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ABSTRACT

The separation and comparison of sex and dominance as they relate to the ability to decode emotional meaning from nonverbal cues were investigated in a study conducted with 51 female and 55 male college students. The study was based on the assumption that submissiveness is positively related to skill in decoding nonverbal cues and was designed after consideration of previous studies (many of which are summarized) of the connections between decoding ability and personal characteristics, personality correlates, and other communicative skills. The research questions addressed the relationships between orientation toward control by powerful others, femininity, and the ability to decode nonverbal cues, and the ability of orientation toward control by powerful others, gender, and femininity to serve as predictors of decoding ability. Measurement instruments included the Profile of Nonverbal Sensitivity, the Bem Sex Role Inventory, and two scales that measured the degree of orientation toward control by powerful others. Analysis of the results indicated that females are better decoders than males, that dominance and decoding may not be meaningfully related, and that femininity and ability to decode nonverbal cues are negatively related. (GW)

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AN INVESTIGATION OF DIFFERENTIAL ABILITY IN DECODING NONVERBAL CUES

Introduction

Statement of the Problem

There are striking differences in ability to decode the emotional meaning of nonverbal cues (Davitz, 1964; Rosenthal, Archer, DiMatteo, Koivumaki, & Rogers, 1974; Leathers, 1976; Knapp, 1978). Many studies concerned with differential ability have tested for effects due to the sex of the decoder. This variable has not consistently produced statistically significant differences. However, when differences do appear, they indicate greater decoding ability for females. It appears that sex differences may be masking other variables which might be more productively investigated.

Recent studies of nonverbal behavior suggest that male/female differences often vary with the factor of dominance/submission (Thorne & Henley, 1975; Eakins & Eakins, 1978; LaFrance & Mayo, 1978). Eye contact, personal space, touch, and other nonverbal acts may be explained and predicted from differential allocation of power between interactants. Many of the dominant behaviors are also characteristic of male patterns, many of the submissive behaviors are coincident with female patterns. Unfortunately,

there are only a few published studies which separate and compare the effects of sex and dominance in a nonverbal context.

The analysis of differential ability to decode nonverbal cues may parallel the above mentioned studies. In those instances where male/female and dominant/submissive describe the same populations, gender analysis may prove to be significant. When these factors do not overlap, gender analysis may prove an unreliable indicator of greater sensitivity to nonverbal cues. The purpose of this study was the separation and comparison of sex and dominance as they relate to the ability to decode emotional meaning from nonverbal cues. Five research hypotheses were developed and tested; results and discussion follow definitions and theory development.

Definition of Terms

Nonverbal communication: ". . . in most cases what is referred to as 'nonverbal' really consists of nonvocal communicative stimuli" (Dance & Larson, 1972, p. 101). "The experience is nonverbal, but the interpretation is verbal. A nonverbal experience is one in which words are neither spoken nor written" (Rosenfeld & Civikly, 1976, p. 11).

Decoding: ". . . how sensitive communicators are to emotional expressions, measured in terms of accuracy of identification . . ." (Leathers, 1976, p. 4).

Internal/external control: "Consistent individual differences exist among individuals in the degree to which they are likely to attribute personal control to reward in the same situation" (Rotter, 1966, p. 1).

Dominance: ". . . successful efforts by one person to control or manipulate the behavior of another" (Maccoby & Jacklin, 1974, p. 260).

Sex roles: ". . . a set of behavioral, temperamental, emotional, intellectual and attitudinal characteristics identified, in a given culture at a given time, as feminine [or masculine]" (Chavetz, 1974, p. 3).

Theoretical Development

Formulation of the theory guiding this study assumed that facility in interpreting nonverbal cues is available to all, but more highly developed in those who judge themselves dominated by others. Such people should find it very useful to anticipate the emotions of their controllers. Dance and Larson ". . . found that interpersonal understanding is facilitated under conditions of threat" (1976, p. 122). To the extent that dominance by others is a condition of threat, it is likely that greater sensitivity to the emotional meaning of nonverbal cues will constitute a facilitation of interpersonal understanding.

The study attempted to demonstrate that development of

decoding ability from a submissive position will be characteristic of both men and women. It predicted that a submissive posture will be associated with high sensitivity, regardless of gender. As Frieze wrote:

> Women's greater receptivity to others' nonverbal cues, while supporting the stereotype of greater emotional warmth, may be necessary for their survival, as with other low status groups (blacks have been shown to be better than whites at interpreting others' nonverbal signals. (1974, p. 290)

The present study aimed at establishing a link between a communicative skill (decoding) and sex role stereotypes. According to Dance and Larson, "Obviously, stereotypes play a real part in the shaping of communication on both the interpersonal and the person-to-persons level" (1972, p. 117).

The feminine stereotype is associated with submissiveness; to the extent that people see themselves as highly associated with that role, they are more likely to be skilled decoders. They will have restricted access to direct communication tactics, since those are related to traits of the masculine stereotype and therefore antithetical to social identity. They will be in greater need of alternative interaction skills based on passivity, such as sensitive decoding of nonverbal cues of emotional meaning.

Previous Findings

Past literature on ability to decode nonverbal communication has emphasized several areas: relationship to personal characteristics, association with other communicative skills, and personality correlates.

Personal Characteristics

Researchers have explored connections between decoding ability and the following personal characteristics: experience, I.Q., age and sex. Most scholars who investigated the effect of experience in the helping professions conclude that such an involvement contributes significantly to heightened ability in decoding nonverbal communication (Kehoe, 1974; Nash, 1974; Rosenthal et al., 1974). Knapp (1978) suggests that the experience of parenting preverbal infants may contribute to enhanced decoding skill.

Investigations of the association of I.Q. and ability to decode reveal that the connection is either slight or nonexistent. Although earlier investigations estimated as much as 20% of decoding ability might be explained by verbal intelligence (Davitz, 1964), more recent and more numerous tests indicate that I.Q. explains no more than 1-4% of the variance in test scores of nonverbal sensitivity (Rosenthal, Archer, DiMatteo, Koivumaki, & Rogers, 1975).

Investigations of age indicate that nonverbal ability increases with age into young adulthood. Dimitrovsky (1964) and Rosenthal et al. (1975) find a gradual, steady increase in ability to identify emotional meaning from vocal and visual stimuli to approximately age 20. Past that point, increases due to age alone are not expected. Dimitrovsky's subjects ranged from five to twelve years; she found no sex differences in the younger children. Rosenthal and his colleagues have not studied children younger than eight years; they find females superior at all ages.

Findings with regard to sex differences in decoding among adults are divided between those which indicate no differences and those which find differences indicating greater ability for females. The former include Zaidel and Mehrabian (1969), Buck, Miller and Caul (1974), Eiland and Richardson (1976) and many others. The latter finding is supported by the work of Argyle, Salter, Nicholson, Williams and Burgess (1970), Rosenthal et al. (1975), Buck (1976) and many others. The state of confusion is aptly illustrated by Buck's work. In 1974, he and his colleagues found no gender differences in decoding ability. Two years later, his female subjects scored higher on his own test than the male subjects.

Recently, several investigations have approached sex differences as part of a complex system of variables. Instead of

simply asking which sex is superior, researchers have explored certain variables such as sex of person observed, nature of emotion displayed, channel of communication, and source of error. These studies open up some interesting possibilities for profitable investigation of sex differences in human communication in the future.

Personality Correlates

A number of writers have attempted to demonstrate meaningful relationships between personality and ability to decode nonverbal communication. Scholars have investigated such traits as introversion/extroversion (Buck et al., 1974), personal adjustment (Buck, 1976; Rosenthal et al., 1975), social desirability (Holstein, Goldstein & Bem, 1971; Zaidel & Mehrabian, 1969) and perceived sex roles (LaFrance & Mayo, 1978; Weitz, 1977). The results of these investigations are conflicting for the most part and yield no conclusive evidence about the relationship of any of the above mentioned correlates with ability to decode nonverbal cues.

The single exception to the conflicting and inconclusive findings above comes from the investigation of control. Observational studies (Argyle & Dean, 1965; Ekman, Friesen & Ellsworth, 1972; Exline, 1972) suggest that submissive members of dyads spend more time looking and listening. The presumption is that

they are gathering more nonverbal cues in order to adjust their furhter communications to the mood of the dominant member.

Studies using locus of control instrument (Rotter, 1966; Joe, 1971) are difficult to interpret because there have been no direct investigations of decoding abilities. Some results indicate that females are more likely to be external, while others find no significant sex differences in orientation toward control. Maccoby and Jacklin report that males are more likely to score high on internal (1974). Recent reviews of the internal/external control literature agree that the orientations are not part of a unidimensional construct, i.e., that more of one does not necessarily predict less of the other.

Other Communicative Skills

The relationship between decoding ability and other communicative skills is positive. Many have found more able decoders to be also more proficient encoders (Zaidel & Mehrabian, 1969 and others). Beldoch (1964) found that those who are adept at understanding nonverbal communication in human interaction are also more skilled at identifying emotional expression in music and art. Rosenthal et al. found that high scorers on the Profile of Nonverbal Sensitivity tend to report warmer, more honest and satisfying relationships with others. There is high agreement that the mentally impaired (schizophrenics, neurotics,

psychopaths and psychiatric patients) generally are less able to decode accurately (Davitz, 1964; Argyle & Dean, 1965; Rosenthal et al., 1975).

The research questions of this study were formulated to address the contradictory findings in the area of sex and ability to decode nonverbal cues. A survey of the literature indicates that certain variables should prove more explanatory than others, based on previous research. The finding that experience in the helping professions and parenting leads to greater ability was instructive in devising the research questions. Ability may well be encouraged by professional and life experiences which are had largely by females. Women are more likely to be the full-time caretakers of infants; they are more represented in nursing, teaching, social work, etc. The substitution of feminine for female (a socially learned role in place of a biologically given characteristic) was thought to be more explanatory.

Findings with regard to communicative skills were useful in developing the research questions. In this culture, females have greater permission to be emotionally expressive. The established correlation between encoding and decoding ability for both sexes suggests that feminine expressiveness should have a counterpart in feminine receptivity.

The investigation of personality yields only one correlate

which appears to be productive: orientation toward control. The relationship of dependency and ability to decode appears to be a corollary of the relationship of femininity and ability, in that dependency is a component of the feminine sex role. To the extent that heightened ability to decode may derive from a position of powerlessness, it may help to explain the contradictory findings with regard to gender and decoding. Studies which have separated male and dominance along with female and dependency have offered more instructive explanations of communication behavior. The research questions for this study were designed to follow this pattern of separation.

Methods and Procedures

Research Questions

1. There is a positive relationship between orientation toward control by powerful others and the ability to decode nonverbal cues.
2. There is a positive relationship between femininity and orientation toward control by powerful others.
3. There is a positive relationship between femininity and the ability to decode nonverbal cues.
4. Orientation toward control by powerful others is a better predictor of ability to decode nonverbal cues than is gender.
5. Femininity is a better predictor of ability to decode nonverbal cues than is gender.

Research Design

An empirical test of the questions was conducted. Because of the state of knowledge in the area of nonverbal decoding ability, a descriptive approach using correlational techniques was chosen. There were three predictors in this study. First, subjects were divided into male and female groups, and their scores on decoding nonverbal sensitivity analyzed accordingly. The criterion measure was established by scores for each subject on the Profile of Nonverbal Sensitivity. Second, subjects' responses to two tests of orientation toward powerful others (Levenson and Isenhart) were factor analyzed and a primary factor score (Factor I) obtained. Third, femininity scores on the Bem Sex Role Inventory were ascertained for each subject. Correlations between the variables were found through Pearson product-moment and partial correlation coefficients.

The sample consisted of 106 undergraduate students at the University of Denver. They were randomly selected from enrollments in Speech Communication classes (51 females, 55 males). All subjects were United States citizens and the great majority were between the ages of 18-22.

Testing was conducted in two hour sessions. Subjects were told only that the study was an investigation of ability to understand nonverbal communication. They completed three pencil

and paper tests (Levenson, Isenhart and Bem further described below). The subjects then took the test of nonverbal sensitivity (PONS described below).

Measurement

The Profile of Nonverbal Sensitivity (hereafter PONS) was developed by Robert Rosenthal and his colleagues in 1974. The first author states that it measures the ability to understand "wordless communication" through tone of voice and movements of the face and body. It consists of a 45 minute film, during which 20 situations are represented 11 times. Sight and sound are combined in different ways, i.e., face and no sound, gesture and sound, etc. Actual words are altered beyond recognition through randomized splicing which changes sequence and rhythm, and content filtering which adjusts pitch and loudness. Subjects choose one of two appropriate labels from a standardized form for each of 220 scenes.

The Bem Sex Role Inventory (hereafter BSRI) was developed by Sandra L. Bem in 1974. This is a Likert-type instrument which has subjects rate themselves on 60 adjectives. The scale ranks from 1 (never or almost never true) to 7 (always or almost always true). Subjects have a masculine score (the average response to the 20 masculine items) and a feminine score (the average response to 20 feminine items). Bem goes on to derive

an androgeny score which identifies subjects high on both masculine and feminine items. These people are presumably able to cope well in a variety of situations. For purposes of testing the hypotheses of this study, only the femininity scores were used, although for preliminary and post hoc tests, all subjects were classified into the four categories Bem recommends (masculine, feminine, androgenous, and undifferentiated).

Factor scores measured the degree of orientation toward control by "powerful others" and "internal." Subjects responded to selected questions from the Levenson scale (1972) and the Isenhart scale (1977). The former asks general questions which are designed to elicit two orientations toward control, powerful others and internal. The questions are like those originally designed by Rotter (1966) with a significant difference: they separate the concepts of chance and powerful others within the construct of external control. Since those who believe their lives to be controlled by chance would have no motivation to study the nonverbal cues of others, the elimination of chance questions allows a more appropriate measure of the theory.

The Isenhart scale was designed by this author to supplement the more general questions of Levenson and specify thinking about control to nonverbal communication. As with the Levenson instrument, respondents chose numbers ranging from 1 (never) to 6

(always) to indicate their typical nonverbal behavior. The questions were based on research findings reported by Henley (1977) and are predicted on the assumption that dominance and submission are expressed through eye contact, interruptions, negotiation of personal space, etc.

Since the Isenhart scale and the Levenson scale (in the form presented to subjects) had not been used previously, they were also administered to 163 students at Metropolitan State College in Denver. Test responses were remarkably similar.

Responses of the Denver University sample on these two measures were then subjected to factor analysis. A three factor varimax rotation solution was employed to produce an orthogonal simple structure solution. The results of this factor analysis revealed three factors accounting for 39% of the total variance in judgments. The first factor to emerge was considerably stronger than the others, accounting for 42% of the total factor variance. This was the factor representing orientation toward control by powerful others. The second factor to emerge accounted for 32% of factor variance; this represented internal control. The third factor accounted for 26% of factor variance but was uninterpretable.

Reliability of the factors was tested through the use of the Kuder-Richardson test of internal consistency. The items chosen

to measure each of the three factors were submitted to this test. Alpha levels for the items associated with each of the three factors were: Factor I = .65, Factor II = .56 and Factor III = .41. As a result, these measures of power may be said to have respectable internal reliability.

Results

Preliminary Analyses

Three preliminary analyses were conducted. First, the profile of the Denver University sample on the Bem Sex Role Inventory was compared to the profile of Stanford undergraduates on whom the test was standardized. In terms of median scores, the Denver University sample was slightly higher: the masculinity median was 5.00 (compared to Stanford's 4.89) and the femininity median was 5.25 (compared to 4.76). The percentages of males and females in the four different sex-typed groups (masculine, feminine, androgenous, and undifferentiated) were very close.

The second preliminary analysis concerned the scores of the sample on PONS and those of other adult groups. The Denver University median score on PONS was 176.0, while that of 54 other groups was 175.87.

The third preliminary analysis compared locus of control scores of the Denver University sample to those of a sample of students from Metropolitan State College. One hundred and five

Denver University students had a mean score of 15.16 on Factor I, while 163 Metro students had a mean score of 15.325.

The test scores of the sample population appear to closely resemble those of other samples on the same instruments, providing some tentative support for generalizing the results beyond the study sample.

Hypothesis Testing

Five research hypotheses formed the specific focus of this study. The first three were tested by Pearson product-moment correlation coefficients. Restatements of the hypotheses and results follow.

> Hypothesis one: There is a positive relationship between orientation toward control by powerful others (as measured by Factor I) and ability to decode nonverbal cues (as measured by PONS).

The strength of association between orientation toward control by powerful others and nonverbal sensitivity was low and negative: $r = -.148$ with $p > .10$. The negative direction of the correlation led to the rejection of the first hypothesis.

> Hypothesis two: There is a positive relationship between perceived femininity (as measured by femininity scores on the BSRI) and orientation toward control by powerful others (as measured by Factor I).

The strength of association between orientation toward control by powerful others and perceived femininity was also low and negative: $r = -.189$ with $p > .05$. The negative direction of the

correlation led to the rejection of the second hypothesis.

> Hypothesis three: There is a positive relationship between perceived femininity (as measured by femininity scores on the BSRI) and the ability to decode nonverbal cues (as measured by PONS).

The strength of association between femininity and ability to decode nonverbal cues was $r = -.005$ with $p > .40$. Again, a low and negative correlation led to the rejection of the third hypothesis.

> Hypothesis four: Orientation toward control by powerful others (as measured by Factor I) is a better predictor of ability to decode nonverbal cues (as measured by PONS) than is gender.

> Hypothesis five: Femininity (as measured by the BSRI) is a better predictor of ability to decode nonverbal cues (as measured by PONS) than is gender.

The fourth and fifth hypotheses would have been tested by partial correlation coefficients had the first three hypotheses produced significant results.

Supplemental Analyses

Inspection of the data suggested that two further analyses of the results were indicated; these concerned the measurement of perceived sex role. Since the use of femininity scores in the correlations represents an in-class test, it was decided to employ between-class tests as well. Subject scores were divided into masculine, feminine and androgenous groups so that they could be compared in two ways. First, the means of the three

groups on the variables were compared. Second, scores of the groups were correlated across the variables (Factor I, femininity, sex, PONS and Factor II).

Mean scores for the variables by sex role groups. Means of the three groups across the measures were substantively alike, to the extent that "t" tests were not indicated. Results are presented in the following table.

Table 1

Mean Scores for the Variables by Sex Role Group

Group	n	PONS	Factor I	Factor II
Masculine	29	175.19	14.50	17.56
Feminine	23	174.50	14.70	16.40
Androgenous	26	174.73	14.73	18.27

Intercorrelation matrix by sex role groups. Scores on the variables were intercorrelated for masculine, feminine, and androgenous groups. A combined masculine/feminine group was included to add confidence when employing such small groups. Results are presented in Table 2. This table presents the correlations of the variables within the subgroups classified by sex roles. The masculine group numbers 29 (21 males and 8 females; .05 p = .355). The feminine group numbers 23 (7 males and 16

females; .05 p = .396). The androgenous group numbers 26 (11 males and 15 females; .05 p = .374). Correlations approaching zero are not reported. Those with a probability of .10 are reported but unmarked. Those with a probability level of .05 are starred. The combined group numbers 52 (28 males, 24 females; .05 p = .27). Since male was coded 1 and female 2, a higher score on sex indicates a greater likelihood of being female.

Table 2

Intercorrelation Matrix by Sex Role Groups

Pairs of Variables	Masculine/ Feminine	Masculine	Feminine	Androgenous
Feminine & Internal	-.28*		-.43*	
Feminine & External			-.35	
Feminine & PONS	-.30*	-.45*	-.35	-.49
Sex & PONS	+.29*	+.35*	+.37	+.33
Sex & Internal				
Sex & External	-.21	-.32		
Sex & Feminine	+.29*			
External & PONS		-.40*	+.27	
Internal & PONS				

Intercorrelations revealed some cases in which consistent direction may be seen, even though not all the figures reach significance. For instance, there is a strong positive association between female and high PONS scores; there is an even stronger negative association between feminine and PONS.

Comparison across groups indicates that the first hypothesis is very close to confirmation level within the feminine group. While tendency toward control by powerful others had no relationship with ability to decode for the total sample, it goes in that direction for a particular sex role group.

Orientation toward control by powerful others is apparently not meaningfully associated with ability to decode nonverbal cues. There are two significant exceptions. In the feminine group, the higher the femininity score, the lower the score on internal control. In the masculine group, the higher the external score, the lower the score on PONS.

Interpretation

There are three major conclusions to be drawn from these results. First, the findings support those studies which have found females to be better decoders than males. Second, the results call into question whether dominance and decoding are negatively or even meaningfully related. Third, findings suggest that femininity and ability to decode nonverbal cues are

negatively related.

Success on the PONS test is more likely for females. The studies which found no differences between the sexes used other measures of decoding ability. Since PONS is more thorough and more widely used than other decoding tests, researchers in the area of sex differences may either have to yield to its results or demonstrate equal credibility for a different instrument.

Those who have explained decoding ability as a function of powerlessness have reasoned that the submissive member of a dyad does more looking and listening. This is assumed to mean that more information is being gathered and used. These results indicate that such an explanation would only apply to a feminine person; for a masculine person, orientation toward powerful others is associated with low ability to decode nonverbal cues. The connection between being less talkative and feeling submissive cannot be assumed, nor is more looking and listening a guarantee of greater accuracy. Further studies exploring the relationship of perceived power and interaction behavior are indicated before meaningful explanations linking power and nonverbal decoding ability can be construed.

In the present study, femininity predicts low decoding ability. The explanation has been offered that women are often better decoders because they are relatively powerless. To the

extent that perceived powerlessness is associated with either female or feminine, this study found no substantiation for the explanation.

It is not clear just what aspect of femininity predisposes against nonverbal accuracy. Perhaps feelings of emotional involvement and identification with the emotional state of others may impede accuracy. A cooler head may be a clearer head. Further analysis of just which aspects of femininity are related to poor decoding is indicated.

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