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Voice Tone and Persuasion

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An experiment was performed to test the hypothesis that the outcome of a vocal nonverbal attempt at persuasion can be affected by the participants' skills in nonverbal communication. Subjects' vocal sending or vocal decoding abilities were pretested. Senders and decoders were agents and recipients, respectively, of social influence in a field experiment in which social influence took the form of the senders' ability to elicit differing degrees of hypothetical willingness on the part of the recipients to serve as participants in psychological research. Senders attempted to do this by varying their vocal nonverbal cues while reading a prepared script. There was a strong effect of recipients' decoding skill on influence such that better decoders complied with the experimental manipulation, and the poorer decoders did the reverse. Sending ability by itself was not related to social influence, but the greatest degree of positive influence occurred in dyads composed of better senders and better decoders. Analysis of ratings of the senders' voices while they engaged in the attempt at persuasion suggested that good and poor decoders might have different affective responses to affectively toned communication.

Most studies of noverbal communication deal with the perception and interpretation of nonverbal behavior (e.g., Ekman, Friesen, & Ellsworth, 1972; Mehrabian, 1972). Because the meaning of most nonverbal behavior is dependent on context, many studies have examined contextual variables such as the features of the social situation, the role relationship of the participants, the attributes of the participants (such as age, sex, or nationality), and the nature of concurrent verbal expression. A related branch of research, also concerned with the meanings of nonverbal cues, assesses individual or group differences in accuracy of sending nonverbal cues and accuracy of decoding the meanings of nonverbal cues conveyed via such channels as facial expression and voice tone (e.g., Davitz, 1964; Rosenthal, Hall, DiMatteo, Rogers, & Archer, 1979).

A less traveled but possibly more important avenue of research examines the relationship of nonverbal communication to social influence. By social influence I mean the effect of one person's nonverbal communication on another's attitudes, beliefs, moods, and overt behavior, as well as the effect of a person's social influence efforts, whether intentional or not, on her or his own nonverbal behavior. Research on nonverbal social influence is important to our understanding of interpersonal outcomes, as several authors have emphasized. For example, Danziger (1976) refers to the use of nonverbal communication in negotiating and maintaining social roles, and Henley (1977) proposes that nonverbal communication is used to control weak social groups.

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Little is actually known about the kinds of nonverbal cues that are employed spontaneously in social influence situations, about the effectiveness of various cues in achieving social influence, or about the possible role of the participants' nonverbal communication skills in the outcome of social influence, intentional or unintentional. These are the issues addressed in the present experiment. Not surprisingly, the popular literature on nonverbal communication devotes most of its emphasis to the social influence function, as noted by Koivumaki (1975), but little of the wisdom contained in the popular books reviewed by Koivumaki is based on empirical research.

Investigators interested in how self-fulfilling prophecies operate, especially in the classroom, have probably done the most work on identifying spontaneous nonverbal cues in unintentional influence (for a review see Rosenthal, 1974). In the area of deliberate influence, investigators have either measured people's perceptions of the likely impact of nonverbal cues (e.g., Mehrabian & Williams, 1969) or experimentally manipulated the use of specific cues to assess recipients' behavioral responses (e.g., Albert & Dabbs, 1970; McGinley, LeFevre, & McGinley, 1975; Miller, Maruyama, Beaber, & Valone, 1976; Scherer, Rosenthal, & Koivumaki, 1972). In the former case we learn little about actual social influence, and in the latter case we give up knowledge of the spontaneous use of cues in exchange for experimental control. A study by Word, Zanna, and Cooper (1974) employed a two-step design that avoided loss of ecological validity. The authors first assessed what interviewers spontaneously did in interacting with black versus white interviewees and then incorporated the most visible differentiating behaviors into an experiment to test the impact of those behaviors on the performance of a new group of naive interviewees. The present experiment was also designed to preserve knowledge of the spontaneous use of nonverbal cues and to measure actual nonverbal social influence.

Recently, it has been proposed that nonverbal social influence does not depend simply on enacting the "correct" influential cues (Rosenthal et al., 1979; Zuckerman, DeFrank, Hall, & Rosenthal, 1978). Instead, the nonverbal communication skills of the participants may have an effect on the outcome of influence situations. Senders who lack the relevant communication skills—for example, the skill to combine smiling, gazing, interpersonal distance, and physical contact in some optimal way for a given purpose—may be ineffectual in achieving their goals of influence. However, even a sender who conveys all the "correct" cues may fail to produce the desired response if the recipient fails to notice the cues or does not share the sender's understanding of their meanings. Thus, successful nonverbal social influence is hypothesized to be a combined function of the sender's and receiver's nonverbal communication skills. In situations in which the recipient is suspicious or is experiencing reactance, however, the degree of noncompliance might be correlated with the recipient's decoding skill, not because better decoders are more motivated to resist influence but because they are better able to detect the cues that would influence them against their will.

Only one experiment testing the combined effects of senders' and receivers' nonverbal communication skills on social influence has been published so far. Zuckerman et al. (1978) pretested the ability of a group of experimenters to express emotions via posed and spontaneous facial expressions and also pretested the ability of their experimental subjects to decode emotions expressed via face, body, and voice tone. These sending and decoding skills were shown to be related to the magnitude of experimenter expectancy effects in a photo-judging task, with the greatest expectancy effects occurring in dyads consisting of better senders and better decoders, and actual negative expectancy effects tending to occur in poor sender – poor decoder dyads. Together, the two nonverbal skill factors had a significant and substantial effect on the degree to which experimenters' expectations biased their subjects' performance.

Do communication skills also play a role in a situation of deliberate social influence? The present study asked this question. A vocal nonverbal persuasion attempt was carried out in a field experiment in which the participants had been pretested on their vocal

nonverbal communication skills. As in the Zuckerman et al. (1978) study, it was predicted that the greater the sender's skill in sending nonverbal cues and the greater the receiver's skill in decoding such cues, the more successful the nonverbal persuasion attempt would be. In sum, the study employed a communicator factor (nonverbal sending skill), a message factor (a nonverbal persuasion attempt), and an audience factor (nonverbal decoding skill).

The present study was also concerned with examining the vocal cues that were emitted by the communicators to answer several questions. First, what vocal cues do communicators spontaneously use when trying to be more versus less persuasive? Second, do good and poor senders of affective nonverbal cues differ in their use of cues in a persuasion situation? And third, are good and poor decoders of affective nonverbal cues responsive to different kinds of cues? These questions were addressed by analyzing ratings of the communicators' voices.

Method

Overview

The study was a field experiment in which one group of subjects (callers) performed a telephone survey in which they asked another group of subjects (respondents) to indicate their hypothetical willingness to participate in psychological research. An experimental manipulation of nonverbal persuasion was employed in which callers tried to elicit either more or less willingness to participate, *using nonverbal vocal cues only,* while reading a prepared script.

Callers' nonverbal sending skills and respondents' nonverbal decoding skills were assessed in pretesting sessions conducted considerably prior to the actual experiment (1 year for the callers, at least half a semester for the respondents). Callers were unaware that their recruitment into the experiment was related to the nonverbal tasks they had performed earlier, and respondents merely thought that they were participating in a survey, not in an experiment. Thus the saliency of communication abilities was extremely low for all participants.

In addition to the main dependent variable of the number of hours that respondents volunteered, the callers' voices were evaluated on a number of dimensions to ascertain some of the qualitative differences in the voices of the good versus poor senders, in their voices in the high persuasion versus low persuasion conditions, and to assess the affects of these differences on the number of hours volunteered.

Subjects

Fifty-four subjects took part in the experiment, 11 of whom served in the caller role and 43 of whom served in the respondent role. The 11 callers were selected from a pool of 34 senders who had been pretested on their vocal sending abilities the previous year, and the 43 respondents were selected from a pool of 61 subjects whose vocal decoding abilities had been pretested the previous semester. Procedures for selection are described below. In addition, 25 subjects served as raters of the callers' voices. All subjects were recruited from psychology courses or via posters and word-of-mouth at The Johns Hopkins University. All received course credit or money.

Pretesting of Sending Skill

Thirty-four undergraduates expressed themselves vocally 16 times (Two Channels of Communication × Eight Scenarios). The two vocal channels were standard content speech (Davitz, 1964) and filtered speech (Rogers, Scherer, & Rosenthal, 1971). In the standard-content channel, the senders recited a standard, neutral-content sentence eight times (once for each of the eight scenarios), varying their vocal cues to suit the affect implied by the name of the scenario. The sentence was "I want to let you know what I'm thinking; I hope you'll understand." In the filtered channel, the senders conveyed each of the eight scenes by expressing themselves in two or three short sentences of their own choosing, using words that seemed appropriate to each scenario. Their voices were later electronically filtered with a Rovoco Model 104 voice content filter that made the speech content unintelligible by using bandpass filters with variable controls.[1] The eight scenarios varied on two dimensions, dominance–submission (D–S) and positivity–negativity (P–N), and were: asking forgiveness (S, N), returning faulty item to a store (S, N), ordering food in a restaurant (S, P), expressing gratitude (S, P), criticizing someone for being late (D, N), expressing jealous anger (D, N), admiring nature (D, P), and talking to a lost child (D, P).[2]

Edited stimulus tapes were made in which the filtered voice clips were truncated to match the average duration of the standard content clips. These tapes were played as a decoding task to 66 judges who had to identify, in a multiple-choice format,

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[1] Available from Peter L. Rogers, 7 Donna Road, Chelmsford, Mass. 01824.

[2] These scenarios were chosen on the basis of normative data provided in Rosenthal et al. (1979). In a norm group, these eight scenes were decoded at the most optimal level of accuracy (midway between chance and 100% accuracy) in the vocal channels of the Profile of Nonverbal Sensitivity test, a multichannel test of ability to decode nonverbal cues.

the particular scenario that was being portrayed in each voice clip. Sending accuracy scores for each sender were based on the mean accuracy of the decoders when judging the sender—in other words, a sender's score depended on what proportion of judges was able to identify his or her clips accurately.

The 11 senders used in the present experiment were five males and six females selected on the basis of very high ($N = 5$) and very low ($N = 6$) scores on the sending task. Those categorized as poor senders scored significantly lower on sending ability than did those categorized as good senders, $t(9) = 8.32$, $p < .001$, effect size $= 5.55\sigma$.[3] In addition, females were better senders than males, although this effect was not significant, $t(9) = 1.60$, $p > .10$, effect size $= 1.07\sigma$.[4]

Pretesting of Decoding Skill

Sixty-one subjects, of whom 43 were respondents in the present experiment, were administered two audio decoding tests: (a) the first quarter, or 64, of the items of the audio decoding test used to assess sending ability (see above), and (b) a 40-item audio decoding test that is a short form of the Profile of Nonverbal Sensitivity test (Rosenthal et al., 1979). This audio test contains the voice of a woman conveying 20 scenarios in two content-free channels —randomized spliced (scrambled) and electronically filtered speech. In this test, subjects have to identify 20 different scenarios using a multiple-choice format with two response alternatives per item. Subjects were classified as poor or good decoders using a median split based on their summed percentage scores on the two tests. The 43 decoding subjects who served as respondents in the present experiment (28 males, 15 females) were selected from this pool to be respondents according to a procedure described below. Those respondents categorized as poor and good differed significantly in their decoding skill, $t(41) = 7.97$, $p < .001$, effect size $= 2.49\sigma$. There was no difference between males' and females' decoding scores.

Instrument and Procedure

The vehicle for the nonverbal persuasion attempt was a short survey administered over the telephone by the callers to the respondents. The callers were informed that the purpose of the study was to study nonverbal persuasion. They were not told that nonverbal communication skills of either party would be related to the effectiveness of the nonverbal persuasion attempt; in fact, they did not know their own skill level and they did not know that the respondents' skill had been tested. The survey began:

> Hello, I'm calling for Dr. Hall of the Psychology Department. We are doing a survey to measure student participation in research done in the Psychology Department. Could I ask you a few short questions?

There were no refusals. The next three questions asked the respondent's major, year in school, and whether he or she was aware that undergraduates were used in psychological research. The final, critical question was:

> Assuming that you would be reasonably paid for your time and that it would fit into your schedule, would you estimate how much time you might be willing to participate in psychological research, over the course of a semester, on a scale of 0 to 20 hours? Of course, this is not a commitment—we are just trying to measure student interest.

The script per se did not constitute the nonverbal persuasion manipulation. Rather, the experimental manipulation of nonverbal persuasion was done by giving the callers the following written instructions:

> On half of your calls you will read the script while trying, using your *vocal cues only,* to influence the person to indicate *more hours* . . . Do whatever you feel will work toward this goal, without deviating from the script [high persuasion condition]. On half your calls you will read the script while trying to influence the person to indicate *fewer hours* . . . As above, do whatever you feel is appropriate to influence the person to sign up for fewer hours, without deviating from the script [low persuasion condition].

The calls were made on an office telephone with an extension so that a research assistant sitting in the same room could listen on the extension and write down the respondent's replies as a check on what the caller wrote down. There were no recording errors. The assistant was also told to note deviations from the prepared script, but there were less than three deviations per call (as verified by listening to the tapes), and deviations were evenly distributed between the high and low persuasion conditions and good and poor encoders. Deviations consisted mainly of speech errors (such as word repetitions), interpolated "okay" and "uh-huh," minor variations in wording (such as saying "can" instead of "may," adding "and" between sentences), and brief clarifications elicited by the respondent. Tape recordings were made with the callers' permission. On these tapes, only the caller's voice (not the respondent's) was recorded.

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[3] Effect size is defined as the difference between two groups divided by their common standard deviation. It is expressed in standard deviation units and is conveniently computed as: $d = (2t/\sqrt{df})$. Cohen (1977) offers rough guidelines for interpreting the magnitude of this standardized index, suggesting that effects over $.80\sigma$ are "large" and generally apparent to the naked eye.

[4] All tests of significance are two-tailed.

Each caller made four calls, for a total of 44 calls. However, one call was later deleted when it was discovered that the respondent had been called twice. The call was not replaced due to the end of the school semester. Each caller was given two lists, one containing poor decoders' names and one containing good decoders' names, in random order. Callers were instructed that their calls would be made from these lists. They did not know what the two lists signified, and the research assistant did not know which list contained the poor (or good) decoders. Callers began with the first available name on the prescribed list and proceeded down the list until two valid calls had been made, crossing off the names of respondents who had been reached. Callers made their two high-persuasion calls followed by their two low-persuasion calls, or vice versa (randomly determined). Within each influence condition, they called one poor decoder and one good decoder, in random order.

A few days after the experiment had been completed, all participants received a letter of full explanation.

Ratings of Callers' Voices

A stimulus tape was made that contained the callers' voices starting with the first sentence of the prepared script and ending after the last question had been answered. Poor and good senders were put on the tape in alternating order. Although 43 valid calls were made, one was accidentally not recorded.

Seven dimensions, each having seven scale points, were chosen for rating. These dimensions pertained to performance aspects of script-reading and to expressive quality of the voice. The dimensions were: (a) dominant / aggressive – submissive / passive; (b) consistent/performed uniformly–inconsistent/performed erratically; (c) expressive/lively–unexpressive/dull; (d) fast/hurried–slow/unhurried; (e) anxious/tense–calm/relaxed; (f) natural/sounds spontaneous–stiff/sounds like a script; and (g) cold/unfriendly–warm/friendly.

One group of eight rated the first two scales for all 42 calls, another group of seven rated the next two scales, and a third group of 10 rated the next two scales. Which two scales were rated by each judge was determined randomly. In addition, because the global variable of "warmth" seemed particularly likely to play a role in eliciting more versus less volunteering, all 25 judges rated this last scale. As a final piece of data, the length of time in seconds that each caller took to read the first and last paragraphs of the script (both reproduced above) was measured with a stopwatch.

A principal-components analysis performed on the seven rating variables resulted in two rotated factors accounting for 43% and 27% of the variance, respectively. The first factor, which will be referred to as *pleasantness,* was characterized by high positive loadings for slowness, calmness, and warmth, and high negative loadings for unexpressiveness and stiffness. The second factor, *lack of confidence,* was defined by high positive loadings for inconsistency and submissiveness. Factor scores were computed for each of these components.

Table 1
Mean Number of Hours Volunteered by Condition, Caller's Sending Ability, and Respondent's Decoding Ability

Caller's sending ability	Respondent's decoding ability	
	Poor	Good
Poor		
Low persuasion	14.2	11.3
High persuasion	9.5	13.3
Difference	−4.7	2.0
Good		
Low persuasion	17.2	10.8
High persuasion	10.6	18.4
Difference	−6.6	7.6

Note. $N = 43$.

Results

The number of hours volunteered by the respondents was subjected to a three-way analysis of variance in which persuasion condition, caller's pretested sending skill, and respondent's pretested decoding skill were all between-subjects factors. No main effects of sending and decoding skill were predicted, since the study was not testing the overall relationship of communication skill and willingness to volunteer. Rather, these skills were predicted to interact with the persuasion conditions, since the persuasion conditions comprised the manipulation of nonverbal communication. It was also predicted that the combination of good sender – good decoder would produce the largest social influence effect. Finally, a main effect of persuasion condition was predicted, but this effect was not essential for interpretation of the relevant interaction effects.[5]

Table 1 shows the means for this analysis, along with the difference between the means

[5] In Zuckerman et al. (1978), described earlier, there was no main effect of experimenters' expectations, but the predicted interactions of experimenters' expectations with sending and decoding skills emerged.

for the high and low persuasion conditions within each combination of sender's and respondent's nonverbal communication skills. These difference scores indicate the direction and magnitude of nonverbal social influence within each cell.

The analysis of variance showed one significant effect, the interaction of decoding skill with persuasion condition, $F(1, 35) = 12.03$, $p < .002$, effect size = 1.17σ. As Table 1 shows, the good decoders responded in the intended direction to the nonverbal persuasion attempt, whereas the poor decoders did the reverse. The table also shows that the prediction that the most positive nonverbal social influence would occur in the good sender–good decoder cell was confirmed, with that cell showing a difference between high and low persuasion conditions of 7.6 hours as compared to an average of −3.1 hours for the other three cells, $F(1, 16) = 7.42$, $p < .05$, effect size = 1.36σ.[6]

Table 2 shows the data collapsed over caller's skill to display the interaction of condition and decoding skill. As the table shows, good decoders offered fewer hours than poor decoders in the low persuasion condition, $t(19) = 2.08$, $p < .06$, effect size = $.95\sigma$, and good decoders offered more hours than poor decoders in the high persuasion condition, $t(20) = 2.80$, $p < .02$, effect size = 1.25σ. In addition, the high and low persuasion conditions differed significantly in the predicted direction for good decoders, $t(20) = 2.13$, $p < .05$, effect size = $.95\sigma$. Somewhat surprisingly, the poor decoders also responded significantly differently to the high and low persuasion conditions, although as noted, in the opposite direction from the good decoders, $t(19) = 2.65$, $p < .02$, effect size = 1.22σ. This reversal of response will be discussed further at a later point. The overall pattern of differences completely cancelled out any main effects due to condition or respondents' decoding skill.

A further analysis of the decoders' responses showed that significant responses to the persuasion manipulation occurred only among the very poorest and the very best decoders: t for the bottom quartile = 2.85, $p < .05$, effect size = 2.01σ; t for the top quartile = 2.50, $p < .05$, effect size = 1.66σ.

Table 2
Mean Number of Hours Volunteered by Condition and Respondent's Decoding Ability

Persuasion condition	Respondent's decoding ability		
	Poor	Good	*M*
Low	$15.7_{a,d}$	$11.1_{b,d}$	13.4
High	$10.0_{a,c}$	$15.9_{a,b}$	13.0
M	12.9	13.5	

Note. Means having the same subscript differ at $p < .06$. See text for magnitudes of effects. $N = 43$.

The bottom quartile responded opposite to the manipulation, whereas the top quartile responded in keeping with it. The remaining (less extreme scoring) decoders showed no significant persuasion effects, although in direction their responses were consistent with those of the more extreme scoring quartiles of their own skill level—moderately poor decoders reversed somewhat, and moderately good decoders responded somewhat in the positive direction.

Knowing the effects of the persuasion manipulation, we can now ask what vocal qualities the callers produced while varying their persuasiveness and whether the poor and good decoders responded to different qualities in the voices. As described earlier, ratings of the callers' voices were made on seven dimensions, and the first and last paragraphs of the script-reading were timed. Table 3 shows the intercorrelations of these variables, and the diagonal of the table shows interrater reliabilities (alpha), which were generally good (median alpha = .81).[7] The two time vari-

[6] This test was computed from a 2 × 2 × 2 ANOVA in which callers were the cases, condition and respondent's decoding skill were within-callers factors, and caller's sending skill was a between-callers factor. Error terms were aggregated following the procedure suggested by Green and Tukey (1960). This ANOVA showed results exactly parallel to those described in the text.

[7] The coefficient for warmth was especially high (.94) due to the larger number of judges who rated this variable. If eight raters instead of 25 had been used, the reliability would have been about .84, close to the other reliabilities.

Table 3
Intercorrelations of Voice Ratings

Scale	1	2	3	4	5	6	7	8	9	*M*	*SD*
1. Inconsistent	*.43*	.07	−.32*	−.46**	−.11	.22	.19	.43**	.52***	3.34	.72
2. Unexpressive		*.68*	−.40**	.04	−.38*	−.42**	−.00	.18	−.07	3.83	.88
3. Stiff			*.82*	−.57***	−.71***	−.53***	−.67***	−.39*	−.53***	4.39	1.03
4. Submissive				*.72*	.44**	.35*	.64***	.56***	.44**	3.84	.86
5. Calm					*.81*	.56***	.71***	.18	.24	4.54	.89
6. Warm						*.94*	.47**	.17	.34*	4.26	1.14
7. Slow							*.86*	.52***	.44**	4.12	1.13
8. Time 1									.59***	9.65	1.84
9. Time 2										25.98	4.11

Note. Interrater reliabilities (alpha) are shown on the diagonal in italics.
* $p < .05$. ** $p < .01$. *** $p < .001$.

ables (Time 1 and Time 2) were reliable ($r = .59$, $p < .001$) and were both significantly correlated with rated slowness.

The good and poor senders, although not differentially capable of effecting nonverbal persuasion, as noted earlier, did have different vocal qualities (Table 4). These correlations indicate that callers classified as accurate senders on the pretest were more expressive, quick, and had more confidence. When these correlations were examined separately for the high and low persuasion conditions, they were almost identical, suggesting a vocal personality among senders that does not vary with experimental conditions. However, the good senders did make their voices sound more consistent in the low persuasion condition than did the poor senders ($r = -.44$, $p < .05$), whereas in the high condition there was no difference in consistency.

Table 4 also shows the correlations of the voice variables with persuasion condition. In the high as opposed to the low persuasion condition, callers were more expressive, more natural, more warm, marginally more calm, and more pleasant (pleasantness factor). Examination of the means revealed that both conditions had mean ratings that were all within one scale point on either side of the midpoint of the scale, indicating that the persuasion conditions did not, on the average, produce extreme degrees of vocal quality. For example, in the low persuasion condition the mean rating on the warmth dimension was closer to the cold–unfriendly pole than in the high condition, but it was still relatively close to the scale midpoint. To further specify the callers' behavior, persuasion condition was regressed onto the nine voice variables in a standard regression procedure. The R of .64 was significant ($df = 9, 31$, $p < .05$), with the one significant coefficient in the final equation being stiffness ($p < .01$), showing that high persuasion condition calls were more natural-sounding (controlling for the other rating variables).

The relationships of the rating dimensions to the number of hours volunteered were consistent with the earlier finding that number of hours volunteered was strongly moderated by respondents' skill. Table 4 shows that the correlations between the ratings and number

Table 4
Correlations of Voice Ratings with Caller's Skill, Persuasion Condition, and Hours Volunteered

Scale	Caller's skill ($N = 42$)	Persuasion condition ($N = 42$)	Hours volunteered	
			Poor decoders ($N = 20$)	Good decoders ($N = 22$)
Inconsistent	−.22	.00	−.33	−.02
Unexpressive	−.32**	−.42***	.21	−.29
Stiff	.01	−.46***	.45[a]**	−.29[a]
Submissive	−.18	.10	−.37	.08
Calm	.18	.28*	−.25[b]	.32[b]
Warm	.04	.34**	−.41*	.06
Slow	.06	.04	−.04	.26
Time 1	−.34**	−.10	−.17	.12
Time 2	−.35**	.09	−.26	−.16
Pleasantness factor	.21	.43***	−.30[a]	.36[a]*
Lack of confidence factor	−.30**	−.10	−.24	−.03

Note. Caller's skill is coded so that 1 = low sending skill, 2 = high sending skill. Persuasion condition is coded so that 1 = low, 2 = high.
[a] Differ at $p < .05$. [b] Differ at $p < .10$. * $p < 10$. ** $p < .05$. *** $p < .01$.

of hours were very different for the two types of decoders. Poor decoders tended to offer more hours when the voices were more stiff and less warm. Comparison of the second and third columns shows that for seven of the nine individual variables, poor decoders did the reverse of what the callers intended, to some extent. On the other hand, good decoders tended to respond in keeping with the cues that were associated with the callers' intentions—For example, high persuasion calls were calmer, and good decoders offered more hours when the voice sounded calmer. For two variables, stiffness and the pleasantness factor, poor and good decoders responded sufficiently differently from each other that the correlations were significantly different even with the small sample sizes.

These results not only suggest what kinds of nonverbal cues callers employed in their persuasion attempts, but also the kinds of cues that poor and good decoders responded to differentially. It is particularly interesting that poor decoders responded most favorably to voices that were low in apparent emotionality—more stiff, more cold, and somewhat more consistent. When the same relationships were examined within Decoding Skill × Condition cells, it was found that poor decoders in the low persuasion condition were particularly compliant to voices that were less inconsistent ($r = -.66$, $p < .05$), more stiff ($r = .79$, $p < .01$), and faster (r for Time 1 $= -.65$, $p < .05$). In contrast, good decoders in the high persuasion condition were particularly compliant when the voices were less unexpressive ($r = -.58$, $p = .06$). Hence, poor decoders were most compliant when the callers were not trying to persuade them, and especially when the voices were more business-like (i.e., consistent, stiff, and fast), whereas good decoders were most compliant when the callers *were* trying to persuade them, and especially when the voices were more expressive.

Discussion

This experiment examined the effects of persuasion via voice quality while reading a prepared script on subjects' hypothetical willingness to participate in research. The results showed that the nonverbal persuasion manipulation significantly affected the communicators' voice quality, but the manipulation did not directly influence subjects' willingness to volunteer. Instead, a predicted interaction of the message factor (persuasion condition) with the audience factor (decoding skill) occurred such that subjects who

were good decoders of vocal nonverbal cues (as assessed in a pretest) responded very differently from those who were designated as poor decoders. The strongest effect occurred among the top and bottom quartiles of decoding skill, suggesting that this kind of nonverbal manipulation might have little effect on the half of the population with middling abilities. Of course, further research employing different kinds of messages—counterattitudinal ones, for example—is needed before we would risk generalizing very much.

Better decoders showed even more positive social influence when paired with communicators who were designated as good senders of nonverbal cues on the pretest. Thus, the largest positive nonverbal persuasion effects occurred in the good sender – good judge dyads. This is just the pattern that was found in the study by Zuckerman et al. (1978; statistic reported in Rosenthal et al., 1979), but in that study the dependent variable was magnitude of experimenter expectancy effect rather than deliberate social influence.

A very intriguing result of the present study was the strong tendency of the poor decoders to respond counter to the intended persuasion attempt. One would have expected this group to be unaffected by the nonverbal persuasion attempt—not to respond significantly opposite to the callers' intentions. It is definitely not the case that the so-called poor decoders were simply uncooperative people who would resist any interpersonal influence, since they were not any less willing to volunteer, overall, than the good decoders (Table 2). Instead, the poor decoders actually seemed to distinguish between high and low nonverbal persuasion calls, as evidenced by their significant reversal. But poor decoders should not, by definition, be able to make such a discrimination. How can this be explained?

Tests of ability to decode nonverbal cues have been shown to have good construct validity (e.g., Davitz, 1964; Rosenthal et al., 1979), so it will be assumed that the subjects labeled as poor decoders were indeed somewhat deficient in their ability to assess the emotional connotations of nonverbal cues. This does not mean, however, that such people cannot tell when affective cues are being communicated. To use an analogy from music, they are not tone-deaf, but rather they do not know the names of the tunes they hear. Thus, a poor decoder may know very well that emotions are being expressed but still be at a loss to identify them. With repeated experiences of being unable to decode cues that they know are being communicated, the poor decoders may develop a negative reaction when confronted with obviously affective cues, as a defense against their helplessness to understand. Alternatively, such people may have deficient decoding skills because they are motivationally unable to accept or deal with emotions, perhaps due to a conflicted or repressive family environment. In either causal sequence, the poor decoder finds emotional situations aversive.

This hypothesis leads readily to an interpretation of the results of the present study. The poor decoders would have responded defensively to the more expressive, emotional qualities of the high persuasion calls. They would have felt more at ease with voices that were more businesslike (stiff, cold, and consistent). Given that the callers were making a polite, noncoercive request, the poor decoders' preference for the more businesslike voices would manifest itself in their offering more hours in the low persuasion condition than in the high persuasion condition. The good decoders, on the other hand, would have understood the intentions of the callers in both conditions and responded accordingly by offering more hours when the callers were trying nonverbally to obtain more hours and fewer when the callers wanted fewer. Of course, if the verbal form of the request had been more coercive, the good decoders might have been less compliant, as suggested earlier. It would be interesting to determine when better decoders will use their superior decoding ability to defend themselves against truly coercive efforts.

These interpretations also enable us to speculate on the origins of some known attributes of poor decoders of nonverbal cues. Their tendency to have less successful interpersonal relationships and to be less skillful teachers and therapists (Rosenthal et al., 1979) may stem from two sources. First, their lack of skill may interfere directly with ability to understand others, and second, they may

turn away—physically or emotionally—from situations in which emotions are likely to be expressed. Further, their tendency to be more dogmatic in general and to have more autocratic attitudes as teachers (Rosenthal et al., 1979) may reflect both their inability to incorporate knowledge of others' feelings into their own decisions and their unwillingness to try to do so. If one cannot assess the feelings of individuals or the climate of a group, one cannot easily engage in democratic social organization, and one may be more likely to invoke arbitrary or conventional rules as an alternative to responding contingently to the expressed feelings of others. Thus one might expect to find that poorer decoders are more negative, anxious, or conservative in certain kinds of face-to-face encounters and more rigid in their principles of conduct, since they must rely on norms and conventions that can be followed without necessarily understanding how other people are reacting.

Finally, the experiment found that the callers' pretested ability to send vocal cues did not have any effect on nonverbal persuasion. This may be due to the fact that callers' sending skill bore little differential relation to the persuasion conditions. Except for consistency, poor and good senders read their scripts in closely equivalent ways in the two conditions. The poor and good senders did, however, differ in overall voice quality regardless of condition, with the better senders being more expressive, faster, and more confident. Because these three variables had little effect on compliance overall, it is perhaps not surprising that sending skill did not emerge as an important variable. In some other context, however, it might. For example, speed of speech has been shown to be related to attitude change, presumably because speakers who speak faster are perceived as more credible (Miller et al., 1976).

To conclude, the findings of this study indicate that the search for nonverbal determinants of direct interpersonal influence cannot proceed without attention to the communication skills of the audience, since for some kinds of influence those skills apparently matter very much. Although this study found limited evidence for the role of the communicator's nonverbal sending skill, such an effect may yet emerge. Finally, the study sheds light on the phenomenology of the poor decoder of nonverbal cues. Deficiencies in communication skills may have extensive ramifications in a person's life, not only because lack of skill precludes the accomplishment of certain tasks, but also because lack of skill produces a world of subjective experience in which, ironically, the other's expressiveness actually impedes effective face-to-face communication.

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