

**DOCUMENT RESUME**

**ED 102 120**

**95**

**SP 008 901**

**AUTHOR** Feldman, Robert S.; Allen, Vernon L.  
**TITLE** Effect of Tutee Performance on Tutor's Verbal and Nonverbal Behavior. Technical Report No. 305.  
**INSTITUTION** Wisconsin Univ., Madison. Research and Development Center for Cognitive Learning.  
**SPONS AGENCY** National Inst. of Education (DHEW), Washington, D.C.  
**PUB DATE** Mar 74  
**CONTRACT** NE-C-00-3-0065  
**NOTE** 20p.; Report from the Project on Conditions of School Learning and Instructional Strategies  
**EDRS PRICE** MF-\$0.76 HC-\$1.58 PLUS POSTAGE  
**DESCRIPTORS** Elementary Education; Elementary School Students; Grade 3; Grade 6; \*Nonverbal Communication; \*Peer Teaching; Task Performance; \*Tutoring; \*Verbal Communication

**ABSTRACT**

The verbal and nonverbal behavior of sixth-grade children tutoring third-grade children was analyzed. The behavior of a sixth grade tutor in a short tutoring session was videotaped. To control the performance of the tutee, a confederate was used who acted in a predetermined manner; the tutee's performance was made to appear either very successful or very poor. It was expected that the performance of the learner would be reflected in both verbal and nonverbal behavior. Results showed that when the student was doing well there was a greater proportion of positively-toned affective statements made by the tutor, and when the student was doing poorly there were more negatively-toned affective statements. Likewise, the nonverbal behavior of tutors tended to reflect the student's performance. The relationship between verbal and nonverbal behavior also was examined. (Author/PD)

Technical Report No. 305

EFFECT OF TUTEE PERFORMANCE ON TUTOR'S  
VERBAL AND NONVERBAL BEHAVIOR

by

Robert S. Feldman and Vernon L. Allen

U.S. DEPARTMENT OF HEALTH,  
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Report from the Project on Conditions of  
School Learning and Instructional Strategies

Vernon L. Allen  
Principal Investigator

Research and Development Center  
for Cognitive Learning  
The University of Wisconsin  
Madison, Wisconsin

March 1974

Published by the Wisconsin Research and Development Center for Cognitive Learning,  
supported in part as a research and development center by funds from the National  
Institute of Education, Department of Health, Education, and Welfare. The opinions  
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Center Contract No. NE-C-00-3-0065

## **Statement of Focus**

Individually Guided Education (IGE) is a new comprehensive system of elementary education. The following components of the IGE system are in varying stages of development and implementation: a new organization for instruction and related administrative arrangements; a model of instructional programming for the individual student; and curriculum components in prereading, reading, mathematics, motivation, and environmental education. The development of other curriculum components, of a system for managing instruction by computer, and of instructional strategies is needed to complete the system. Continuing programmatic research is required to provide a sound knowledge base for the components under development and for improved second generation components. Finally, systematic implementation is essential so that the products will function properly in the IGE schools.

The Center plans and carries out the research, development, and implementation components of its IGE program in this sequence: (1) identify the needs and delimit the component problem area; (2) assess the possible constraints—financial resources and availability of staff; (3) formulate general plans and specific procedures for solving the problems; (4) secure and allocate human and material resources to carry out the plans; (5) provide for effective communication among personnel and efficient management of activities and resources; and (6) evaluate the effectiveness of each activity and its contribution to the total program and correct any difficulties through feedback mechanisms and appropriate management techniques.

A self-renewing system of elementary education is projected in each participating elementary school, i.e., one which is less dependent on external sources for direction and is more responsive to the needs of the children attending each particular school. In the IGE schools, Center-developed and other curriculum products compatible with the Center's instructional programming model will lead to higher student achievement and self-direction in learning and in conduct and also to higher morale and job satisfaction among educational personnel. Each developmental product makes its unique contribution to IGE as it is implemented in the schools. The various research components add to the knowledge of Center practitioners, developers, and theorists.

## **Acknowledgments**

We are grateful to Craig Allen and Susan Medaris for  
playing the role of tutee in these experiments.

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## I Introduction

In recent years much interest has been expressed in using elementary school children to tutor their peers and children even younger than themselves. While there is some evidence showing that such tutoring is beneficial to both the tutor and the tutee (see Sheehan, Feldman, & Allen, 1974, for a comprehensive literature review), little is known about the psychological processes which occur during such dyadic interactions. Indeed, except for occasional studies on teaching styles of tutors (Cicirelli, 1972; Feshbach & Devor, 1969), there is no research into the behaviors occurring naturally within a tutoring session.

The present study focuses on the tutor's affective behavioral reactions to the performance of his tutee. Although other studies have shown that the success or failure of the tutee leads to differential attributions of ability and liking for him when assessed following a tutoring session (Feldman & Allen, 1974a), no studies have examined the behavioral manifestations of affect in an ongoing teaching session. It seems obvious that the performance of the tutee will affect what the tutor says verbally. Instances of failure will likely lead to correction, and more explanation, while success will elicit responses of a different sort. However, it is also reasonable to assume that the affective content of the tutor's verbal output, quite apart from what is specifically required by the demands of the teaching situation, will be affected by the tutee's performance. Since it has been shown that tutors like successful tutees more than unsuccessful ones (Feldman & Allen, 1974a), tutors would be expected to behave verbally more positively toward successful tutees than toward unsuccessful ones.

Another important factor which is likely to be affected by the success of the tutee is the nonverbal behavior of the tutor. It is well-documented that nonverbal behavior of the adults follows relatively specific patterns and is related to stimulus factors in the social

ecology in lawful ways (Argyle, 1969; Mehrabian, 1972). As an obvious instance, positive affect is frequently shown by a greater degree of smiling and nodding behavior. Conversely, displays of frowning and head-shaking are indicative of attitudes of negative affect. It seems likely that differential non-verbal behavior will occur similarly in response to tutee success or failure.

One measure of nonverbal behavior that is of particular interest is the amount of eye contact and the gaze direction which occurs during an interaction. Argyle and Kendon (1957) have noted a positive correlation between degree of eye contact and positive affect; this has been substantiated in other studies (Duncan, 1969). It is probable that eye contact and gaze direction would be affected by the performance of the tutee in a teaching situation, with greater eye contact occurring during instances of tutee success.

It is also reasonable to assume that a positive relationship will exist between verbal and nonverbal behavior. For instance, verbal praise is likely to be accompanied by smiling, while corrections and admonitions may occur simultaneously with frowns. However, specific patterns of simultaneous verbal and non-verbal behavior have not been demonstrated on other than a very gross level. One of the aims of this study is to examine the relationship between verbal and nonverbal manifestations of affect. Of particular interest is the possibility that the verbal-nonverbal relationship will differ according to the performance of the tutee. It is possible that under conditions of tutee failure verbal statements representing positive affect will be accompanied by negative nonverbal behavior, since verbal behavior may be more under the control of the tutee and less representative of his actual attitude.

For this study, the behavior of a sixth-grade tutor in a short tutoring session was video-taped and the content of both the verbal and nonverbal behavior of the tutor

was analyzed. In order to control the performance of the tutee, a confederate was used who acted in a predetermined manner; the tutee's performance was made to appear either

very successful or very poor. It was expected that the performance of the learner would be reflected in both the verbal and nonverbal behavior of the tutor.

## II Method

### Tutors

Subjects who served as tutors were 56 sixth-grade children (25 males and 31 females) from local public schools. Subjects were recruited from a randomly selected sample of public school children through letters to their homes offering \$2.00 for participating in the experiment.

### Tutees

The experimental manipulations required that each tutor experience a specified sequence of success or failure responses from his tutee. Therefore, the tutees were not actually naive younger children, but confederates of the experimenter trained to answer in a standard manner according to experimental condition. Two younger third-grade children, one boy and one girl, were used throughout the experiment to play the role of tutee.

### Procedure

The experiment was divided into two sessions occurring approximately one week apart. Subjects were given instructions on a concept-formation task at the first session and taught the concept to a younger child of the same sex at the second session. Experienced elementary school teachers taught the concept of "trapezoid" to a group of subjects in a session lasting approximately 45 minutes. The subjects received instructions on three simple rules for identifying an instance of trapezoid and, at the end of the session, were administered a "Trapezoid Concept Attainment Test" (Cicirelli, 1971) to ensure that they understood the concept of trapezoid.

Within one week of the first session subjects returned individually for a second 45-minute session to teach the concept of

"trapezoid" to a same-sex confederate serving as the tutee. Subjects were given two copies of a specially prepared booklet entitled "Trapezoids," which they used in teaching the tutee. On the first page of the booklet were the three rules for trapezoids, and on the following page were three examples of a trapezoid. The remainder of the booklet contained a "Trapezoid Test," composed of a set of geometric figures taken from the "Trapezoid Concept Attainment Test." Half of the figures were examples of a trapezoid and half were non-examples. The tutor's booklet, labeled "Teacher's Answer Book," had the answers to the test questions.

Before meeting with his tutee each subject was given explicit instructions on how to teach the trapezoid concept. Tutors were told to explain the three rules of trapezoid identification and then to explain why the three examples were trapezoids. Subjects were given the following instructions concerning the trapezoid test:

For each page, read the number and the question, "Is this a trapezoid?" Tell your student if he is right or wrong. If your student is wrong, tell him the right answer and why he was wrong. When you have done 12 of the questions, go over the three rules for trapezoids at the beginning of the book again and show him the examples. Then begin the test at Question 13.

Thus, after completing the first half of the test, the tutors reviewed the rules for trapezoid identification and then completed the other 12 items of the test. Tutors were told that the test was to be given orally, and were asked to be sure that the tutee could not see the answers in the "Teacher's Answer Book." Subjects were then introduced to the tutee (confederate) for the actual teaching session. The tutor and tutee were left alone in a small room and told that the experimenter would wait

outside until the teaching session was completed.

The tutor was seated directly opposite the tutee across a narrow table about 3 feet wide. Behind the tutee was a hidden camera which faced the tutor at a slight angle. The tutor's chair was positioned in the midst of other furniture to ensure that it would not be moved radically during the teaching session. This furniture arrangement also discouraged the tutor from leaving the side of the table opposite the tutee.

For this study, only data from the tutors' behavior on the first half of the test (12 items) were used. It was thought that the clearest assessment of the tutor's reaction could be achieved prior to the reteaching of the concept.

### Experimental Design

A 2 x 2 factorial analysis of variance design was used. The two factors were: (1) tutee's performance on the test items (success or failure), and (2) sex of subject (male or female). Subjects were assigned randomly to one of the following conditions in which the number and sequence of correct answers that the confederate gave on the concept-formation task was experimentally manipulated.

1. Successful Performance. In this condition, the confederate performed well on the 12-item test. To provide verisimilitude, the confederate answered incorrectly on three trials (25%) distributed evenly across the test. The remaining nine items (75%) were answered correctly.

2. Failing Performance. The confederate answered erroneously on 75% of the trials in this condition, answering correctly only three times. This condition is the obverse of the Success condition: the confederate gave correct answers only on those items answered erroneously in the Successful Performance condition. On the nine remaining questions, the confederate either answered erroneously or said he didn't know the answers.

To aid the confederate in giving the required sequence of answers, the "Trapezoid" booklet he was given was specially prepared for the experimental condition. The predetermined answer the tutee was to give for each

trial was indicated to him by a light mark on his booklet.

### Dependent Measures

Upon conclusion of the teaching session, the experimenter administered a brief questionnaire to the tutor and the tutor was paid. Because the subjects were so young they were not told that a confederate had been used. All subjects were encouraged to express their feelings about the teaching experience and were given assurances that they performed successfully in the experiment.

### Method of Analysis

A video tape was made of each tutor as he administered the first 12 items of the concept attainment test. Only the nine critical test items in which the tutee's performance was consistent with his condition (success or failure) were used in the analysis; data from incongruent performance test trials were not included.

The affective content of the tutor's speech was determined from typed transcripts of the tutoring sessions. Three categories were used for assessing tutors' verbalizations: positive affective tone, negative affective tone, and neutral affective tone. A logical phrase, usually a statement, was used as the unit of analysis. Examples of phrases coded as representing positive affect are, "That's right," or "You're really catching on." Examples of phrases coded as negative are, "You're wrong," "It isn't," or "You better try getting these." Each subject was given two scores: proportion of positively-toned statements and proportion of negatively-toned statements. Proportional scores were figured using the total number of phrases (positive, negative, and neutral) made by the tutee during the nine critical trials.

Two coders, after an initial training period, independently content-analyzed the nonverbal behavior of the tutees according to a set of 20 codes. Body movements during the presentation of the 9 critical test items were coded. A behavior was scored as having occurred each time it was seen by the coder. Thus, the same behavior could be scored as occurring more than once for a given test item. Simultaneous behaviors could also be scored. After each coder had independently analyzed all subjects, the two went back and reconciled their differences, which were not substantial. The number of times each behavior had been recorded was then summed across the nine

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<sup>1</sup> Readers interested in questionnaire data from this study may refer to Feldman & Allen, 1974a.

critical trials. The total number of all behaviors was then determined, and a proportion for each particular behavior was calculated. Thus, each subject received 20 scores (one for each behavior) and, because they were proportions, the scores summed to one.

The 20 categories of behaviors were determined in two ways. First, the body movements found to correlate highly with affect in prior studies were deemed a priori to be relevant. Thus, such behaviors as smiling, head nodding, head shaking, and postural changes were included. Second, random samples of the video recordings of the tutors' behavior were observed, and the behaviors which were seen most frequently and which could be objectively coded were also included. The 20 categories of behavior were: big smile; little smile; pursing lips;

laughing; biting lips; eyebrow up; eyebrow down; nodding head; shaking head; head movement other than shaking or nodding; hand to face; hand to hair; reaching toward tutee; fidgeting; leaning forward; leaning backward; standing up; general gross body movements; erect posture; and tutor's placing test booklet between himself and tutee.

Eye gaze direction and amplitude were recorded by one coder. The absolute number of gazes directed at the tutee was found and was expressed as proportion of the total number of gazes directed at the tutee, at the test materials, or in some other direction. In addition, the amount of time spent gazing at the tutee was determined and expressed as a percentage of the total time spent looking at the tutee or in some other direction.

### III Results

#### Verbal Behavior

As would be expected, tutors in the Successful Performance condition used a higher proportion of positive affective verbal phrases than did tutors in the Failing Performance condition. Mean proportion of positive phrases was .34 in the Success condition and .07 in the Failure condition. A  $2 \times 2$  analysis of variance, with tutee performance and sex of tutor as factors, showed a strong effect for tutee performance ( $F = 98.99$ ,  $p < .001$ ), while neither the main effect for tutor sex or the performance  $\times$  sex interaction was significant.

Results for the measure of negative affective verbal phrases were also as predicted: there was a greater proportion of negative affect displayed under tutee failure than when the tutee was successful (.02 versus .13, respectively). The analysis of variance revealed a main effect for tutee performance ( $F = 64.09$ ,  $p < .001$ ). The main effect for sex and the performance  $\times$  sex interaction were not significant.

Thus, the affective content of verbal statements was as predicted. Under conditions of tutee success, there was a greater proportion of positively-toned statements made than under conditions of tutee failure. Conversely, there was greater negative affect expressed verbally under conditions of tutee failure than under conditions of tutee success.

#### Nonverbal Behavior—Body Movement

Data for each of the 20 categories of body movements were analyzed in a  $2 \times 2$  analysis of variance, with tutee performance and tutor sex as factors. On none of the categories was the sex effect or the interaction of performance and sex significant; therefore, only the main effect of tutee performance will be considered when reporting

the results in the following sections. Means for each category are shown in Table 1.

#### Facial Expression

Seven of the categories were concerned with the tutor's facial expressions: big smile, little smile, pursing lips, biting lips, eyebrow up, eyebrow down, and laughing. Of these categories, only "pursing lips" showed a significant main effect for tutee performance ( $F = 5.34$ ,  $p < .02$ ). There was a greater proportion of lip pursing under conditions of tutee success (.016 and .040, respectively). Data from the other six categories showed that there was virtually no difference in mean scores between the success and failure conditions.

#### Head Movements

There were three kinds of behavior scored which related to head movement: head nodding, head shaking, and other types of head movement. There were significant main effects for performance for both the head nodding category ( $F = 5.21$ ,  $p < .03$ ) and the head shaking category ( $F = 19.82$ ,  $p < .001$ ). Means for these categories were as expected: there was a greater proportion of nods under conditions of tutee success (.085) than under conditions of tutee failure (.046), and there was a smaller proportion of head shaking under success (.014) than failure (.048).

#### Posture

There were five categories relating to posture: leaning forward, leaning back, reaching toward tutee, erect posture, and standing up. Three of these measures differed significantly according to tutee performance. Tutors tended to lean forward toward the tutee a greater proportion of the time in the tutee failure condition than in the tutee

Table 1

**MEAN SCORES--NONVERBAL BEHAVIOR  
UNDER CONDITIONS OF SUCCESS AND FAILURE**

Category	$\bar{X}$		F
	Tutee n = 31 Success	Tutee n = 25 Failure	
1. Big smile	.015	.026	2.11
2. Little smile	.039	.030	.40
3. Pursing lips	.016	.040	5.34*
4. Biting lips	.034	.034	.01
5. Eyebrow up	.007	.008	.01
6. Eyebrow down	.000	.001	2.47
7. Laughing	.011	.015	.34
8. Nodding head	.085	.046	5.21*
9. Shaking head	.014	.048	19.82***
10. Other head movement	.061	.073	.87
11. Leaning forward	.047	.107	7.11*
12. Leaning back	.054	.024	1.22
13. Reaching toward tutee	.022	.081	20.18***
14. Erect posture	.284	.107	29.33***
15. Standing up	.007	.017	1.79
16. Fidgeting	.049	.093	7.12**
17. Hand-to-face	.028	.051	2.27
18. Hand-to-hair	.011	.016	.67
19. Placing book between face and tutee	.158	.107	2.54
20. General gross body movement	.050	.068	1.76

\* p &lt; .05

\*\* p &lt; .01

\*\*\* p &lt; .001

success condition ( $F = 7.11$ ,  $p < .01$ ). Mean proportions were .107 under failure and .047 under success. In addition, tutors reached toward their tutee significantly more ( $F = 20.18$ ,  $p < .001$ ) under conditions of failure (.081) than under conditions of success (.022). There was a strong difference ( $F = 29.33$ ,  $p < .001$ ) in the degree to which the tutor's posture was erect, with tutors sitting erect more with successful tutees (.284) than with failing tutees (.107).

### Gross Body Movements

There were five categories which fell under the rubric of gross body movements: fidgeting, hand-to-face, hand-to-hair, placing book between face and tutee, and general gross body movement. The only measure to show significant differences between performance conditions was that of fidgeting ( $F = 7.12$ ,  $p < .01$ ). There was less fidgeting when the tutee was successful (.049) than when he was failing (.093).

### Eye Gaze

Measures were made of the proportion of instances in which the tutor directed gazes at the tutee, as opposed to looking at the test materials or looking some other place in the room. The proportion of time the tutee spent gazing at the tutor was also recorded. These data were analyzed in two  $2 \times 2$  analyses of variance, with tutee performance and tutor sex as the factors.

The measure of proportion of gazes directed at the tutee showed a significant effect only for tutee performance ( $F = 15.06$ ,  $p < .001$ ); the sex effect and performance  $\times$  sex interaction were not significant. Examination of the means showed that tutees in the failure condition were looked at a greater proportion of time (.42) than tutees in the success condition (.34).

Parallel results were found for the measure of proportion of time spent looking at the tutee. The only significant effect found in the analysis of variance was the main effect for tutee performance ( $F = 3.69$ ,  $p < .06$ ). Again, tutors spent a greater proportion of time looking at the tutee when he was doing poorly (.32) than when he was doing well (.25). Thus, the two measures of eye gaze consistently show that there was greater eye contact under conditions of failure than under conditions of success.

### Relationship Between Verbal and Nonverbal Behavior

To determine the nature of the relationship that existed between the verbal and nonverbal behavior of the tutors, correlations were calculated between subjects' scores of proportion of positive and negative verbal phrases and the twenty nonverbal behaviors. The correlations were carried out separately for subjects in the Success condition and for those in the Failure condition (see Table 2). In this way it was possible to determine whether the associations existing between verbal and nonverbal behavior differed according to tutee performance.

Looking first at the relationship between positive verbal phrases and nonverbal behavior, it can be seen from Table 2 that under conditions of tutee success there was only one significant correlation: there was a negative relationship ( $r = -.305$ ,  $p < .10$ ) between positive affective statements and gross body movements; the less frequent the positive phrases, the greater was the amount of body movement. This association is similar in direction, although not significance, under conditions of tutee failure ( $r = -.184$ ,  $p = ns$ ). The only other significant correlation between positive phrases and nonverbal behavior is found under conditions of tutee failure. Pursing lips is associated positively with positive verbal behavior ( $r = -.184$ ,  $p = ns$ ). Apparently, while the tutor is verbally positive, nonverbally he is pursing his lips when the tutor is doing poorly. This contrasts with the negative, although not statistically significant, relationship ( $r = -.234$ ), between positive phrases and pursing lips when the tutee does well.

Turning next to the relationship between negative verbal behavior and the nonverbal behavior of the tutor, Table 2 shows that there were no significant correlations found between negative verbal phrases and nonverbal behavior under conditions of tutee success. However, four associations were found in the failure condition. As is reasonable, there was a positive relationship between head shaking and negative affective verbal behavior ( $r = +.440$ ,  $p < .05$ ). The data also show a positive association between erect posture and negative verbal behavior ( $r = +.378$ ,  $p < .10$ ). This finding is congruent with two others: there is a negative relationship between negative verbalization and the categories of reaching toward the tutee ( $r = -.536$ ,  $p < .05$ ) and leaning back from the tutee ( $r = -.377$ ,

Table 2  
CORRELATIONS BETWEEN VERBAL AND  
NONVERBAL BEHAVIOR, BY CONDITION

Nonverbal Behavior	Positive Verbal Statements		Negative Verbal Statements	
	Success	Failure	Success	Failure
1. Big smile	-.064	.108	-.044	.132
2. Little smile	-.065	.146	.205	.249
3. Pursing lips	-.234	.343*	.204	-.154
4. Biting lips	.011	-.162	-.037	-.056
5. Eyebrow up	-.079	-.088	.049	.105
6. Eyebrow down	***	-.333	***	.060
7. Laughing	-.006	.155	.134	.134
8. Nodding head	-.012	.271	.130	.112
9. Shaking head	.026	.026	.077	.440**
10. Other head movement	.170	-.076	-.248	.022
11. Leaning forward	.061	-.109	-.254	-.098
12. Leaning back	-.111	-.001	-.010	-.377*
13. Reaching toward tutee	.183	-.166	-.133	-.536**
14. Erect posture	-.003	.109	.177	.378*
15. Standing up	.244	-.062	.050	-.229
16. Fidgeting	.013	.033	.061	-.008
17. Hand-to-face	.075	.020	-.099	-.331
18. Hand-to-hair	.218	-.257	-.012	.118
19. Placing book between face and tutee	.053	-.048	-.218	.285
20. General gross body movement	-.305*	-.184	.230	.088

\*  $p < .10$

\*\*  $p < .05$

\*\*\* approximation; no cell variance

$p < .10$ ). It appears that when criticizing his tutee, a tutor tends to sit rigidly erect, and does not show signs of relaxation by leaning forward or back in his seat.

Two other statistics were calculated to determine whether the relationship between verbal and nonverbal behavior differed, in general, according to tutee success or failure. Looking at positive and negative verbalizations separately, the correlation for each nonverbal behavior was calculated between the good and poor performance condition, and a new correlation was determined. The finding of a positive correlation suggests that there is a similarity between the distribution of associations for the conditions of success and failure, while a negative correlation sug-

gests that the relation between verbal and nonverbal behavior differs according to the performance of the tutee. For positive verbal statements, the correlation between good and poor performance was  $-.357$ , indicating that the relationship between verbal affective phrases and nonverbal behavior differed according to the performance of the tutee. For negative verbal statements, the correlation was  $+.315$ ; here there was a positive correlation, suggesting that negative verbalizations are associated with nonverbal behaviors similarly and independently of the performance of the tutee. However, neither of these correlations were statistically significant and thus must be viewed merely as trends.

## IV Discussion

The present results show quite clearly that both the verbal and nonverbal behavior of a tutor is affected by the performance of his tutee. Tutors were found to display differential behavior verbally and nonverbally depending on whether the tutee did well or poorly on a concept attainment test.

It is not surprising that the affective content of a tutor's verbal behavior would vary according to tutee performance, although this contradicts the contention of some researchers that tutors tend to give little spontaneous feedback (either positive or negative) unless specifically instructed to do so (Harrison, 1971). It is interesting to note that under conditions of successful tutee performance, tutors tend to make a greater proportion of positively-toned statements (.34) than they do negatively-toned statements under conditions of tutee failure (.13), although the absolute degree of success and failure is equivalent between the two conditions. It appears that tutors may try to avoid giving verbal indications of negative affect or feedback to their tutee, which could be congruent with a possible norm against direct criticism of others (Goffman, 1959).

The results of this study may have been influenced by normative constraints regarding the display of negative (and sometimes positive) affect. Although some of the behaviors which differed significantly between conditions are easily predictable (e.g., greater head nodding under success and greater head shaking under failure), the most obvious symbols of positive affect--smiling and laughing, for instance--showed only minimal, nonsignificant differences between conditions. In fact, 13 of the 20 behaviors measured in the study did not differ between conditions. We may attribute this lack of difference to three possible factors. First, and most obvious, some of the behaviors we measured may simply not be related to the affective feelings generated by tutee success and

failure. Second, and this appears to be the case with the eyebrow down, eyebrow up, and standing up categories, the occurrence of certain behaviors was very low in proportion to the total number of behaviors, perhaps leading to a bottoming effect.

The third possible explanation for the lack of difference between conditions on many of the measures is the one that is the most theoretically intriguing. We speculated earlier about the existence of a norm against the display of affect. If there is such a norm, then the tutors would be attempting to hide both verbal and nonverbal displays of affect. Ekman and Friesen (1969) have speculated that when an individual attempts to suppress his veridical feelings, the actual affect may "leak" out, particularly nonverbally. Mehrabian (1972) has evidence supporting this notion. Assuming that this leakage phenomenon does occur, we might expect that the most obvious nonverbal signs would not be affected, but that more subtle sorts of nonverbal behaviors would show the effects of suppression. The significantly greater occurrence of fidgeting under conditions of tutee failure provides suggestive evidence for this speculation, as Ekman and Friesen (1969) have theorized that leakage is most likely to appear in nonverbal behaviors other than facial.

The leakage hypothesis is also supported by the finding that the more positive the tutor's verbal statements are, the more likely he is to purse his lips when the tutee is doing poorly. If the tutor feels he is not being genuine when he is verbally positive toward the tutee, then this may be displayed nonverbally. Of course, the leakage explanation is mere speculation, based upon only a small portion of the data. In fact, most of the significant relationships found between verbal and nonverbal behaviors show congruence between the two modes of expression.

Another finding from the nonverbal behaviors of the tutors bears comment.

Mehrabian (1972) has reviewed much evidence showing that positive affect between two persons is positively correlated with closer spatial position, greater forward leaning, more eye contact, and more direct body orientation. He subsumes these behaviors under the term "immediacy" and says that an individual assumes a more immediate position with someone he likes. However, our findings suggest just the opposite relationship: there was significantly greater reaching toward the tutee, more leaning forward, and more eye gaze (in terms of both number and length of contacts) when the tutee did poorly than when he did well.

The explanation for these findings rests on the nature of the task. When the tutee was doing poorly, the tutor would often lean forward toward the tutee and explain things, pointing out examples in the tutee's booklet. Thus, the typical relationship between proximity and affect was reversed in this study. The reason for the greater amount of eye contact under conditions of tutee failure is less obvious. It is possible that the

tutor attempted to use the tutee's nonverbal behavior to assess the source of the tutee's difficulty which would have resulted in greater eye contact in the failure conditions. Whatever the reason, these results do suggest that relationships between nonverbal behavior and affect which are stated in one-to-one, invariant terms are subject to disconfirmation. The nature of each situation must be taken into consideration when hypothesizing relationships between nonverbal behavior and affective states.

The fact that tutors display differential nonverbal behavior according to the performance of their tutee is of practical as well as theoretical interest. Feldman and Allen (1974b) found that third and sixth graders were able to decode accurately the nonverbal expressions of another third grader (although adults could not). It is likely, therefore, that the tutee whose tutor is displaying negative affect nonverbally may be quite capable of decoding the meaning of that behavior--and that both his performance and his morale will be negatively affected.

## References

- Argyle, M. Social interaction. Chicago: Aldine-Atherton, 1969.
- Argyle, M., & Kendon, A. The experimental analysis of social performance. Advances in Experimental Social Psychology, 1967, 3, 55-98.
- Cicirelli, V. G. Concept learning of young children as a function of sibling relationships to the teacher. Technical Report No. 175. Madison: Wisconsin Research and Development Center for Cognitive Learning, University of Wisconsin, 1971.
- Cicirelli, V. G. The effect of sibling relationship on concept learning of young children taught by child-teachers. Child Development, 1972, 43, 282-287.
- Duncan, S. Nonverbal communication. Psychological Review, 1969, 72, 118-137.
- Ekman, P., & Friesen, W. Nonverbal leakage and clues to deception. Psychiatry, 1969, 32, 88-106.
- Feldman, R. S., & Allen, V. L. Tutor attribution and attitude as a function of tutee performance. In Four studies on attribution of ability. Technical Report No. 281. Madison: Wisconsin Research and Development Center for Cognitive Learning, 1974. (a)
- Feldman, R. S., & Allen, V. L. Developmental trends in nonverbal decoding. Paper presented at the Eastern Psychological Association meeting, Philadelphia, 1974. (b)
- Feshbach, N., & Devor, G. Teaching styles in 4-year-olds. Child Development, 1969, 40, 183-190.
- Goffman, E. Presentation of self in everyday life. New York: Anchor, 1959.
- Harrison, G. V. Structured tutoring. Working Paper No. 24. Provo, Utah: Brigham Young University, 1971.
- Mehrabian, A. Nonverbal communication. Chicago: Aldine-Atherton, 1972.
- Sheehan, L. D., Feldman, R. S., & Allen, V. L. Review of the literature. In V. L. Allen (Ed.), Inter-age interaction in children: Theory and research in the helping relationship. Madison: University of Wisconsin Press, in preparation.

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