The Relationship between Non-verbal Awareness of Self and Teaching Competence in Student Teachers

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ABSTRACT *College of Education students were assessed for their beliefs about the use of non-verbal activity in the classroom and for their awareness of their own non-verbal classroom behaviours. Both measures were found to be related positively to the judged teaching competence of the students. It is suggested that these two aspects of non-verbal behaviour, knowledge about non-verbal possibilities and awareness of own non-verbal activity, are not related and that training in both might have positive effects on the overall teaching competence of student teachers.*

INTRODUCTION

The last two decades have seen sufficient evidence for it now to be accepted that non-verbal behaviours play an important part both in communication and in social interaction (cf. for example Argyle, 1975; Harper, Wiens & Matarazzo, 1978; Rosenthal, 1979). The processes of social interaction and communication have been summarised in the Social Skills Model (Argyle, 1967) which hypothesises that interaction involves each participant in a constant process of receiving messages from the other, interpreting those messages, selecting next behaviour, performing the selected acts and receiving feedback from the other in response. Such interaction is made more effective if participants are aware of, and monitor, both their own behaviours and those of the other participants. Evidence to support this stems from studies such as that of Snyder (1974) who has shown that those who score highly on a measure of self-monitoring, tend also to be skilled at intentional expression and communication, and use cues emanating from others to monitor and manage their own self-presentation.

If one views the classroom as a communicative and interactive situation then it is reasonable to assume that similar monitoring of non-verbal behaviour is an important process here and that it is likely that there is a relationship between teachers' skill at non-verbal monitoring and their general teaching competence. The desirability that teachers monitor their own non-verbal behaviour is underlined by the researches, for example, of Chaikin, Sigler & Derlega (1974), Chaikin & Derlega (1978), and Feldman & Allen (1979), which have demonstrated that teachers may

unwittingly emit non-verbal behaviours which vary with their perception of the pupil, and that these behaviours may have a deleterious effect on the communication and interaction between teacher and pupil. Such effects may perhaps be minimised by awareness and monitoring by teachers of their own behaviours.

Neill, Fitzgerald & Jones (1983) report a study in which female probationer teachers in primary schools were interviewed as to techniques they would use in class, for example to gain attention. The interview responses were scored for mentions of non-verbal communication. When comparisons were made between teachers of different rated levels of competence it was found that the more effective teachers made more mentions of their own 'posture' and of the 'gaze' of themselves and of their pupils; that is, there is some evidence that more competent teachers are more aware of non-verbal possibilities in the classroom. In a parallel study, Neill *et al.* asked similar questions of 92 student teachers at the end of a teaching practice, using this time a questionnaire instead of interviews. Again counts of mentions of non-verbal behaviour were made and comparison made between groups of students placed in five categories of teaching competence. Overall the number of non-verbal mentions was low, and no significant differences were found in number of mentions between the different teaching competence groups. A similar pattern was found when the responses of students training for first and middle schools were analysed separately from those in secondary schools. There is no evidence that the conclusion for probationer teachers is also applicable to trainee teachers.

This paper reports investigations with student teachers in which a distinction is made between two types of awareness: one the awareness of non-verbal behaviours which may be used in classrooms; the other an awareness of the non-verbal behaviours actually used by oneself in the classroom. These two awarenesses will be referred to as Non-verbal Beliefs about Self, and Non-verbal Awareness of Self.

METHOD

Non-verbal Beliefs about Self

Student teachers in the third year of a four BEd. course reported on their beliefs about classroom activity by completing an inventory of typical non-verbal behaviours. This was done in a college lecture room under supervision. The inventory was first constructed by researchers in the USA (Grant & Hennings, 1971) and subsequently tried out and modified in England (Lawes, 1985). The main inventory asks respondents to indicate by ticking items whether, for specified functions, they use described non-verbal behaviours. The specified functions are Conducting, that is "control participation, focus attention, and obtain attending behaviour", Acting, "use bodily motion to clarify and amplify meanings"; Wielding, "manipulate objects, materials, or other parts of the environment when children are not expected to focus on my motions"; Personal Motions, "more of a personal nature than they are instructional". A second part of the inventory asks respondents to rate themselves on certain characteristics of their non-verbal behaviour: Level of activity, Speed of motion, Size of motion, Number of Personal motions, Verbal/Non-verbal orientation, Clarity of Non-verbal Communication.

Non-verbal Awareness of Self

For some groups of students who had responded to the inventory, the tutors visiting and observing in the classroom also completed the inventory, as a description of the student, immediately after their last observation visit. For these students there was, therefore, (a) a self-report and (b) an observation report made by the tutor. These two reports were matched item by item and a coefficient of agreement calculated for each student. This coefficient represents the degree to which what the students say they do matches with what the tutors observe them to do.

Teaching Competence

For both investigations the measure of teaching competence was the joint judgement of supervising teacher and college tutor expressed on a five point scale and made at the end of the teaching practice as a normal routine. In each investigation the relationship between this measure and the belief or awareness measure was explored.

RESULTS

Non-verbal Beliefs and Teaching Competence

Three groups of students, representing three cohorts of students passing through the four year course, form the samples for the first investigation. For the three samples product-moment correlation coefficients between the teaching competence ratings and the self-report scores on sections of the inventory are shown in Table I together with combined correlation coefficients obtained by using the Fisher z coefficient technique. A pilot study had suggested different relationships for student teachers practising in secondary and in junior schools; the data for the two age-ranges was therefore analysed separately.

For those students teaching in secondary schools there is clear evidence of relationship, sufficient to suggest that those rated toward the more competent end of the teaching ability scale tend to see themselves as having the non-verbal characteristics of conveying with clarity that which they wish to communicate, of making use of larger rather than smaller motions, of tending to make rapid rather than slower signals, of using a high level of non-verbal activity, and probably using a greater number of Acting moves, i.e. "those which help to clarify meaning or illustrate", than do those student teachers of lower competence.

For the teachers of juniors no clear pattern shows and we might conclude that there is little relationship between their beliefs about teachers non-verbal acts and their general teaching competence. However, inspection of scattergrams suggested that curvilinear relationships might exist, so, for Sample A only, correlation ratios, eta, were calculated. These ratios are shown in Table II and contrasted with the correlation coefficients repeated from Table I. To indicate level of significance of the ratios the guidance of Guilford & Fruchter (1978) was followed and a significance level of 2 SE adopted for the 5% level and 2.56 SE for the 1% level. To

TABLE I. Relationships between teaching competence and inventory measures on non-verbal beliefs: product-moment correlation coefficients for student teachers in secondary and junior Schools.

	Sample A	Sample B	Sample C	Combined samples
Secondary	$N=24$	$N=31$	$N=26$	$N=81$
Functions scale				
Conducting	+.330	+.029	+.144	+.170
Acting	+.438**	+.170	+.145	+.257 $p<.01$
Wielding	−.110	−.348	+.049	−.140
Personal	+.055	+.069	−.408*	−.103
Characteristics scale				
Level	−.040	+.443*	+.225	+.218 $p<.05$
Speed	+.229	+.380*	+.277	+.297 $p<.02$
Size	+.338	+.271	+.407*	+.338 $p<.01$
Personal	+.079	−.035	+.007	+.017
V/nv Bias	+.494**	+.220	+.034	+.260 $p<.02$
Clarity	+.262	+.523*	+.335	+.385 $p<.001$
Junior	$N=38$	$N=25$	$N=30$	$N=93$
Functions scale				
Conducting	+.099	−.083	+.038	+.018
Acting	+.140	+.183	−.048	+.093
Wielding	+.036	+.042	+.113	+.064
Personal	+.004	−.234	+.173	−.194
Characteristics scale				
Level	−.052	+.198	+.162	+.104
Speed	−.062	−.183	−.141	−.129
Size	+.343*	−.143	+.116	+.110
Personal	+.122	−.248	−.144	−.092
V/nv Bias	+.092	+.077	+.012	+.060
Clarity	+.080	+.357	−.130	+.108

Significance: * = $p<.05$, ** = $p<.01$.

compare the coefficient and the ratio in each case the F test of linearity has been used and the table indicates those cases where the curvilinear result differs significantly from the linear. Although eta may not be an entirely appropriate technique with the size of sample involved some interesting indications emerge.

Interpreting the data in Table II along the lines that where there is a correlation ratio exceeding the 1% level of significance and where in addition the F value is at, or near, the 5% level, then there is a situation worthy of discussion, the following suggestions are made. Inspection of scattergrams was used as a guide to the shape of the relationship.

For Acting and Conducting the relationship is of an inverted U shape suggesting that, in the lower half of the teaching competence range, an increase in the acknowledged repertoire is related to increasing teaching competence, but that,

TABLE II. Relationship between teaching competence and inventory measures of non-verbal beliefs: comparison of linear and curvilinear calculations. Sample: student teachers in junior schools, $N=38$.

	Correlation coefficient (Linear)	Correlation ratio (Curvilinear)	Significance of difference Curvilinear: Linear	
			F. value	Value for $p<.05$
Functions scale				
Conducting	+.099	.499**	2.584	2.67
Acting	+.140	.465**	4.265	3.28
Wielding	+.036	.487**	2.474	2.67
Personal	+.004	.396**	3.161	3.28
Characteristics scale				
Level	−.052	.154	0.133	2.52
Speed	−.062	.525**	2.33	2.52
Size	+.343*	.560**	1.77	2.52
Personal	+.122	.540**	2.42	2.52
V/nv Bias	+.092	.210	0.231	2.52
Clarity	+.080	.420*	1.28	2.52

Significance of correlations: *$=p<.05$, **$=p<.01$.

in the upper part of the range, decreasing conscious repertoire is related to increasing teaching competence. The curve for Wielding shows a change, with increasing teaching competence, from a lack of relationship to a situation, like that for Acting and Conducting, where, in the upper ranges of teaching competence, decreasing reported repertoire is related to increasing teaching competence. For Speed of motion the curvilinear relationship is also of inverted U shape: in the lower range of teaching competence perception of oneself as using higher speed is related to relatively higher teaching competence, in the upper range of teaching competence perception of slower moves is related to higher teaching grades. Claim for higher amounts of Personal moves is related to higher teaching competence in the lower half of the teaching competence range, the relationship is negligible in the upper range.

Why should there be different relationships between non-verbal beliefs and teaching competence for those teaching in different types of school?. It might be that the two groups give different responses to the inventory; but *t* tests on all three samples show no significant differences in mean score and Kolmogorov-Smirnov tests revealed no differences in distribution; an explanation in terms of differential response to the inventory seems unlikely. The explanation could, however, lie with the other variable, the teaching competence criterion. At the surface level, that is in terms of grades awarded, there are no significant differences in distribution between the secondary and junior groups; but the criteria on which judgements are made and, indeed, the styles and techniques which make for success may well differ. The difference between junior and secondary teaching might be characterised as the difference between class teaching and individual/group work. The secondary classroom may be seen as a theatre with a largely verbally expressed message to be communicated to an audience. To convey the verbal content across the distance

from teacher to audience the conscious use of non-verbal signals play an important, but supporting, role Acting moves help to clarify and illustrate the message content. Conducting moves help to hold the attention and control the audience. Larger and more rapid moves have more impact than smaller, slower moves which are more suitable for close encounters. In contrast, the junior classroom may be seen as a closer, more intimate teacher-to-small-group or teacher-to-individual, situation. In this context the student teachers who are judged as most successful may be those who can employ a range of techniques, including but not exclusively non-verbal, and who, through their closer contact with individuals operate, in a way which concentrates the attention on the pupil and in so doing leaves little perceptual capacity for awareness of own behaviours. They may or may not be using non-verbal techniques, but if they do, are using them without conscious selection. For the less skilled teacher in this context, still aware of self and possibly aware of 'the class' as an audience rather than 'the pupil', a conscious repertoire of non-verbal moves from which to select might well make the difference between weak teaching performance and moderate performance. This explanation supposes a particular style of junior teaching; the validity of the ideas expressed might be tested by replications of the study which take note of, and contrast, variations in classroom style.

Non-verbal Awareness and Teaching Competence

The three samples for this investigation were groups of third year students taken from consecutive years in the same college. All students completed the inventory as a self-report as described for the first investigation. For the observation-based completion of the inventory a small group of college tutors was recruited who had sympathy for, and some experience of observational schedules and techniques. The samples of students were not the result of deliberate selection but an incidental selection determined by the range and type of student allocated to these particular tutors. Thus the structure of each sample in terms of, for example, sex distribution, age-range taught, range of teaching grades, etc. emerged at the end of the procedure; the disadvantages of this were offset by the advantage that the final decision as to the teaching grade was not known until after the time when the tutor completed the inventory. Tutors were supplied with inventories and printed instructions in the penultimate week of the six-week teaching practice; they were not approached about participation, or provided with inventories until that week to avoid the possibility that a tutor, having been made specifically aware of non-verbal behaviour early in the practice might, unwittingly, counsel or train the student. Similarly, to avoid alerting the student to the tutor's interest in non-verbal activity, the tutors were requested not to take the inventory into the classroom but to read it before the visit and answer it immediately afterward.

For each student the responses made by the student and by the tutor were compared and a coefficient which expresses the number of agreements as a decimal fraction of the total possible inventory responses was calculated. All obtained agreements were greater than would have resulted from chance. The agreement

coefficients represent the degree to which the student is aware of his or her non-verbal actions. Table III shows the relationship between this awareness and teaching competence for each sample and for the three samples combined. Combining the three samples into one can be justified since there were no significant differences between samples in the distribution of agreements or in the distribution of the coefficients.

TABLE III. Relationship between teaching competence grade and non-verbal awareness of self; three samples

	N	Correlation Coefficient	Significance	Mann Witney test between teaching competence grades	Significance
Sample X	12	+.616	$p<.05$	1&2:3&4	$p<.05$
Sample Y	10	+.365	N.S.	2:3	$p<.42$
Sample Z	16	+.480	$p<.05$	1&2:3&4	$p<.001$
Combined	38	+.326	$p<.05$	1&2:3&4	$p<.015$

Rank order correlation coefficients except for Sample Y which is biserial.

For each of the three samples there is a positive correlation between 'awareness' and teaching competence; for Samples X and Z this correlation coefficient reaches the level required for significance at the 5% level, as does the coefficient for the combined samples. The figure for Sample Y does not fulfil this requirement but the range of teaching competence grades for this sample turned out to be restricted to two only, that is grades 2 and 3 on the five point scale.

For the Mann Whitney tests a split was made at the division between teaching grades 2 and 3, this marks the point between grades labelled 'Very Good' or 'Good' and those labelled 'Satisfactory' or 'Weak'; there were no candidates who were awarded the fifth grade 'Fail'. For two of the three samples the awareness of those in the lower teaching competence grades is significantly lower than those in the higher teaching grades; the sample in which this does not occur is that which produced a range of two adjacent grades only; for the combined sample the difference is acceptably significant.

There is sufficient evidence to back the claim that those in the lower ranges of teaching competence tend also to be those who are less aware of their own non-verbal activities in the classroom. Inspection of the inventory responses and comparison of student responses with tutor observations suggests that whereas, in general, students are aware of their facial expression, gaze, eye contact, head moves, orientation and proximity to pupils, they are less aware of the movements of their hands, arms, feet, and body. Students in the low teaching competence group seem, in addition, less aware than their more able colleagues of the signals which involve facial expression, gaze, eye contact, and head moves.

DISCUSSION

Although these studies are exploratory in nature the results are sufficient to justify a comparison with those of Neill *et al.* (1983), and to warrant a consideration of their significance for the classroom.

Of the two studies, that into non-verbal beliefs is most akin to those reported by Neill. Neill showed that effective probationer teachers made more conscious reference to non-verbal activities than did less effective teachers; this is paralleled in the present study by the results for teachers in training, a population which did not show significant results for Neill. Why the difference? In both Neill studies, the questions asked, whether by interview or by questionnaire, were open-ended and allowed reference to verbal, non-verbal, or indeed, any activity. In the present study the attention of respondents is specifically focused on the non-verbal possibilities. It seems that whereas in the open situation probationers show awareness of both verbal and non-verbal possibilities, student teachers tend to concentrate on the verbal and to minimise or ignore the non-verbal. But, when their attention is drawn to the non-verbal, student teachers will reveal their knowledge of these possibilities and this knowledge is related to teaching competence. This argues for making available to teachers in training the conscious knowledge of non-verbal options, a conclusion supported by Neill's finding that more effective probationers showed more recall of non-verbal behaviour being mentioned in their college course.

The investigation of awareness, in the sense of knowing what one is doing, suggests that we add a new dimension to the picture since (a) this awareness is clearly related to overall teaching competence and (b) the figures in Table IV suggest, not only that there is no convincing overlap between the 'beliefs' measure and the 'awareness' measure, but that the relationship may be reciprocal.

TABLE IV. Rank order correlation coefficients between scores on non-verbal beliefs and scores on non-verbal awareness ($N=12$)

	Non-verbal beliefs Scores on inventory sections			
	Conducting	Acting	Wielding	Personal
Non-verbal awareness of self	−.342	−.004	−.316	−.421

No coefficient reaches significance at 5% level.

The practical, rather than the statistical picture might well be that the effective teacher:

(a) possesses a set of beliefs about, a repertoire of possibilities for and the involvement of nonverbal activity for certain teaching functions;

(b) has the ability to be aware of, to monitor, those nonverbal activities which he or she is actually using in the classroom;

(c) has, and this is speculative and not inferred from the data, the ability to modify these non-verbal acts if evidence suggests that they are ineffective.

This latter characteristic may offer a link between the awareness and teaching competence. The teachers who know what they are doing, are sensitive to the responses and reactions of pupils and as a consequence modify their own procedures could well be those whom we judge as effective. This could explain the relationship found for student teachers; the relationship may not necessarily hold for experienced teachers. Experience may aid the initial process of selecting strategies and tactics; the moves adopted being appropriate for the function and being used at the appropriate time, are effective and thus no modification or adaptation is required. For an experienced teacher these skills may have become autonomous and no conscious awareness need operate.

It would be naive to suggest that experience alone may develop non-verbal skills. As with other skills some planned training is more likely to produce effective and efficient performance. Two aspects of non-verbal skill have been identified: the possession of a repertoire of appropriate acts and the monitoring of the performance of these acts; and a third aspect postulated: the ability to modify acts.

For trainers of teachers to be able to introduce students to an appropriate repertoire requires them to have knowledge of those non-verbal acts which are effective in classrooms. There exists some such knowledge, for example, that based on methodical observation such as formed the basis for the Grant & Hennings inventory, but there is a need to describe precisely the acts which fulfil identified functions in a variety of classroom situations. This should be done in naturally occuring situations using methods which, in addition to recording the action, investigate the meaning attributed to that act by both the teacher and the pupils, for, as teachers monitor their own actions so pupils are aware of, and interpret the teachers' actions and respond to those actions in a manner which seems appropriate. Interaction can be smooth and communication unambiguous only if the meanings attributed by both are congruent.

To improve the monitoring of their own non-verbal skills the attention of all students should be drawn to movements of their hands, arms, feet and body and the weaker teachers should, in addition, be directed to consider their facial expressions, gaze, eye-contact and head moves. Just how one does this is open to experiment, possibly with use of video-recordings both of the student under training and of other, more skilled performers.

The ability to modify actions has as a prerequisite the recognition of the need to modify. This recognition may be initiated by the reception and interpretation of those messages from the pupils which indicate that the teacher's intentions are not being fulfilled. These messages may be intentional or unintentional; some will be nonverbal. The awareness by teachers of pupils' non-verbal acts has been shown by Hall *et al.* (1977) to be correlated with teaching competence measures; earlier work by Jecker, Maccoby & Breitrose (1965) indicates that the skill is amenable to training. Here is yet another competence which should be part of the teacher's repertoire of non-verbal skills and for which further research is required, aimed at

identifying pupil cues which, for example, indicate non-comprehension or lack of interest in a variety of classroom contexts.

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