

Bodily communication and personality

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Fifteen measures of non-verbal communication were coded from videotaped interactions between a female confederate and 18-21 year old female subjects ($n = 46$). Three measures of extraversion and neuroticism had previously been taken from the subjects, as was a measure of IQ. Correlation and factor analysis revealed significant relationships between certain of the variables. Extraversion was strongly associated with speaking more; a teacher's rating of neuroticism was associated with touching the self, pausing during conversation, and an absence of expressive gesture; lower IQ was associated with smiling while listening; and self-report personality questionnaire neuroticism was associated with gaze aversion.

Despite the obvious importance of the verbal medium for man, non-verbal communication remains important for a whole range of human functioning including the expressing of emotion, the communication of interpersonal attitudes, the sending of information about personality, status and group allegiance, enhancing the meaning conveyed by speech, communicating what is appropriate or rewarding behaviour in a situation and even providing for societal level ritual and regulation. Such non-verbal communications take place, for example, through facial expressions, gaze, gestures, bodily contact, interpersonal proximity, clothing and other adornments and through non-verbal vocalizations.

Argyle (1969) and Mehrabian (1972) have suggested a variety of laboratory and naturalistic ways to observe and measure human bodily communication. Thus Argyle (1975) was able to report that in one controlled laboratory situation, individuals looked at the other's face 75 per cent of the time while listening, 40 per cent of the time while talking and, furthermore, that the duration of a glance lasted for 3 sec. Great individual variation was found and the figures reported were averaged out across individuals. Graham & Argyle (1975) found that using gestures in addition to language increased one's ability to convey two-dimensional shapes to another. Once again there were great individual differences, this time in the ability to use gestures effectively. Indeed, there were even suggestions of national differences between English and Italian males in this respect. The interesting question thus arises as to whether there are consistent patterns of individual differences in this variation in bodily communication and, furthermore, whether such differences are linked to extant measures of personality.

Perhaps the most extensively researched dimensions of personality are those of intelligence, extraversion, and adjustment. The evidence for the pervasiveness of these three dimensions comes from factor analytic studies, from longitudinal studies of the stability of these measures over time and from twin studies suggesting some degree of heritability for these traits. There is evidence too that these particular dimensions are related to the types of interpersonal functioning with which this paper is concerned. Thus regarding *verbosity*, Carment, Miles & Cervin (1965) found that extraverts tended to speak first and for a greater proportion of time. Patterson & Holmes (1966) and Rutter, Morley & Graham (1972) also found that extraverts spoke more.

For *gaze*, Mobbs (1968) found that in a 3 min interaction, extraverts maintained more eye contact than introverts. Kendon & Cook (1969) found that extraverts looked at another person more often while speaking than did introverts. Rutter *et al.* (1972) found that whereas extraverts looked more *frequently* than introverts, there was no difference between the groups in the *proportion* of time spent looking. As regards adjustment, Kendon & Cook (1969) found that high scorers on measures of neuroticism looked at the face of the other less than did more adjusted individuals, a relationship which has also been found when comparing schizophrenics and

depressives to normals (Rutter & Stephenson, 1972; Williams, 1974). Thus the frequency of looking at the other appears to be related to both extraversion and adjustment.

As far as *gestures* are concerned, Argyle (1975) has suggested that extraverts might be more expansive in gestures while poorly adjusted individuals might use self-touching gestures more often. In support of this latter idea Ekman & Friesen (1972) found that face-touching gestures were more likely to occur when a person experienced shame or other negative attitudes towards the self.

Regarding *interpersonal proximity*, Patterson & Holmes (1966) found that proximity was positively related to extraversion, although only for male-female dyads. Cook (1970) found that, compared to introverts, extraverts would both choose to sit closer to their partners and do so in ways which would enhance eye-contact. Williams (1971) found that introverts stated a preference for sitting relatively far apart, although there were no differences between introverts and extraverts when he used actual behaviour as his measure.

The present study was designed to explore further the relations between bodily communication and personality.

Method

Forty-six, 18–21 year old female occupational therapy students completed, in a group testing situation at their school, the Eysenck Personality Inventory (EPI: Eysenck & Eysenck, 1970) and the Cattell 16 Personality Factor Questionnaire (16PF: Cattell, Eber & Tatsuoka, 1970). In addition, one of the lecturers who knew the participants well, completed a Teacher Rating Scale (TRS). This, adapted from Nicholson & Gray (1972) consisted of rating the students on each of 24 adjectives from those used by Eysenck & Eysenck (1970) to describe extraversion and neuroticism, e.g. *sociable, outgoing, moody, anxious, etc.* These can be summed to give a composite score. All three instruments provided measures of extraversion and adjustment. In addition, Cattell's 16PF provided a measure of IQ; and the EPI, a lie scale. The students believed the questionnaires to be part of their training course and were unaware that these questionnaires were in any way linked to their subsequent visit to the university's psychology department.

Two weeks later, these students came singly to the Social Psychology Laboratory to take part in a 'study on social interaction' and were introduced to a female confederate of the experimenter who was described as 'helping in this study just like you are'. The two were seated on chairs 3 ft apart, and asked to discuss their plans for the forthcoming summer vacation. The confederate, who knew nothing of the administration or the results of the personality questionnaires, was instructed to accommodate to the interpersonal tempo and style of each participant. A confederate was used in order to keep the situation as constant as possible across subjects. The alternative would be to record the interaction between two subjects. While this would have meant a gain in naturalness, it would have lost in experimental control – a ubiquitous problem for social psychologists. Without their knowledge, participants were videotaped during this interaction which lasted for 10 min. The first, fifth, and ninth minute were recorded and served as the raw data for the study.

The participant was debriefed regarding the fact that she had been recorded, and her permission was sought to use the videotape. The participant was then thanked for having taken part and paid a small honorarium towards any expenses she had incurred.

Results

Within the personality tests, consistency was found across the measures of extraversion. Eysenck's EPI correlated $r = 0.74$ with Cattell's 16PF and $r = 0.64$ with the Teacher Rating Scale which in turn correlated $r = 0.67$ with Cattell's 16PF. Less consistency was found for the measures of adjustment. Eysenck's neuroticism correlated $r = 0.60$ with Cattell's anxiety and $r = 0.16$ with the Teacher Rating Scale, which in turn correlated $r = 0.02$ with Cattell's measure. There were no relationships between the measures of extraversion and neuroticism, i.e. they were quite independent of each other. British norms for the EPI measures showed the present population to be typical of occupational therapists, having a somewhat elevated extraversion ($\bar{X} = 13.63$, $\sigma = 4.43$) and neuroticism ($\bar{X} = 11.52$, $\sigma = 4.70$) score. The distribution was sufficiently normal to justify the use of parametric statistics.

The 3 min of videotape for each of the 46 participants were coded. Coders used a stopwatch

Table 1. Intercorrelations among non-verbal behavioural measures ($n = 46$) (product moment correlations; decimal points omitted)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Speech	(1.0)														
2. Pauses	-03	(1.0)													
3. Proximity	-05	-09	(1.0)												
4. Total gesturing	31**	-36***	09	(1.0)											
5. Gestures while speaking	20	-38***	02	94***	(1.0)										
6. Touching the self	-10	09	03	-32**	-31**	(1.0)									
7. Touching while speaking	-15	18	-05	-39***	-37***	93***	(1.0)								
8. Touching while listening	-27*	-13	-03	-21	-18	59***	47***	(1.0)							
9. Head nodding	-27*	11	32**	-19	-19	09	-02	14	(1.0)						
10. Total looking	-51***	01	-14	-08	-03	-21	-22	-15	19	(1.0)					
11. Looking while speaking	-34***	03	-31**	-07	-03	-28*	-26*	-21	09	91***	(1.0)				
12. Looking while listening	-10	40***	09	-18	-15	06	03	-04	20	41***	20	(1.0)			
13. Total smiling	-06	-03	-13	07	10	00	08	-15	-02	14	04	18	(1.0)		
14. Smiling while speaking	-09	07	-27*	-02	04	-09	00	-18	02	18	14	14	94***	(1.0)	
15. Smiling while listening	-11	-02	21	30**	30**	06	13	-11	02	01	-14	19	68***	46***	(1.0)

* $P < 0.10$; ** $P < 0.05$; *** $P < 0.01$ (two-tailed probabilities).

to record the length of time which, in their *own judgement*, the subject spent engaged in each behaviour of interest. Scores could thus range from 0 to 180 sec. Thirty-five per cent of the tapes were then recoded by a second 'blind' coder and interjudge reliabilities calculated for the following categories of non-verbal communication: speaking ($r = 0.95$); pausing before replying to other's speech ($r = 0.81$); proximity or leaning forward ($r = 0.72$); gesturing with the hands ($r = 0.99$); gesturing with the hands while speaking ($r = 0.99$); touching the self ($r = 0.89$); touching the self while speaking ($r = 0.89$); touching the self while listening ($r = 0.75$); nodding the head while listening ($r = 0.66$); looking at the other's face ($r = 0.90$); looking at other's face while speaking ($r = 0.89$); looking at other's face while listening ($r = 0.43$); smiling ($r = 0.89$); smiling while speaking ($r = 0.92$); and smiling while listening ($r = 0.76$). All measures were of total time duration.

It would have been possible to use a measure based on frequency rather than duration. With respect to gaze behaviour, Kendon & Cook (1969) found a significant relationship between these two measures both for gaze while speaking ($r = +0.51$, $P < 0.05$) and for gaze while listening ($r = 0.44$, $P < 0.05$). These figures indicated a positive relationship between the two measures. Duration was chosen for use in this study since it seemed the more sensitive of the two and because it provided interval scale data which lend themselves to a more sophisticated statistical analysis than frequency data.

A Pearson product moment correlation matrix was computed in order to examine the interrelations among the personality and non-verbal communication variables. The matrix for the interrelations among the measures of non-verbal communication is shown in Table 1. The correlations between the personality and non-verbal communication variables are shown in Table 2. The total matrix was then factored by principal components analysis with unities in the diagonal. Eight factors emerged with eigenvalues greater than one. A four factor solution (rotated by varimax) was chosen. The loadings of all items > 0.30 on these four factors and the proportion of total variance for which they account are shown in Table 3.

Factor one, *extraversion*, loaded very heavily on the three personality measures of extraversion and was associated with speaking more, nodding the head and looking at the other less. Factor two, which we may call '*other-rated anxiety*' was positively associated with a teacher's rating of adjectives describing neuroticism. This factor was made up of relatively long pausing before responding in the conversation, the making of relatively fewer outward gestures, and touching the self more both when speaking and listening to another. Factor three was a *smiling* factor. There seemed to be a general tendency to smile or not to smile, regardless of whether speaking or listening. Smiling, especially while listening, tended to be associated with lower IQ. Factor four was *self-reported neuroticism* and was associated most strongly with gaze aversion. It loaded on the two paper-and-pencil measures of neuroticism and also on leaning forward (proximity) during the interaction.

Discussion

With regard to the relationship between personality and non-verbal communication, this study supports some of the previous findings and conjectures in the literature. First it replicates the previous finding that extraverts talk more than introverts (Carment *et al.* 1965; Patterson & Holmes, 1966; Rutter *et al.* 1972) and that talking tends to be negatively correlated with nodding the head and looking at the other (Argyle, 1969). That talkers looked and nodded less, is readily interpretable in terms of their having less time to perform these 'listener responses'. Secondly, this study throws light on Argyle's (1975) conjecture that poorly adjusted individuals will touch themselves more. Factor two suggests that the naive perception of 'adjustment' (as measured by the Teacher Rating Scale) arises from such behavioural cues as touching the self, an absence of expressive gesture, and pausing during conversation. Such a naive perception is factorially quite separate however from adjustment as assessed by the EPI and Cattell's 16PF (factor 4). These

Table 2. Correlations between personality and non-verbal communication behaviours ($n = 46$) (Pearson product moment correlations; decimal points omitted)

Non-verbal communication variables	IQ	Extraversion		Neuroticism			Teacher rating
		Eysenck	Cattell	Teacher rating	Eysenck	Cattell	
1. Speech	11	42***	35***	39***	-01	-02	-27*
2. Pauses	04	-01	04	-08	15	19	-13
3. Proximity	08	-15	-18	-14	16	05	09
4. Total gesturing	-12	11	13	18	-10	00	-12
5. Gestures while speaking	-16	10	12	15	00	00	-06
6. Touching the self	06	11	12	08	03	-01	29**
7. Touching the self while speaking	07	08	10	11	02	-03	24*
8. Touching the self while listening	10	-05	04	10	-06	-08	25*
9. Head nodding	08	-34***	-16	-41**	13	06	06
10. Total looking	-21	-23	-11	-28**	-22	-22	13
11. Looking while speaking	-19	-19	09	-27*	-21	-18	04
12. Looking while listening	-06	-06	00	-03	07	-01	02
13. Total smiling	-13	10	09	24*	-09	-33***	03
14. Smiling while speaking	-03	05	10	20	00	-26*	03
15. Smiling while listening	-40***	03	-08	09	-04	-06	00

* $P < 0.10$; ** $P < 0.05$; *** $P < 0.01$ (two-tailed probabilities).

Table 3. Item loadings $> |0.30|$ on first four factors of principal components analysis

Personality and non-verbal communication variables	Factors			
	1	2	3	4
EPI - Extraversion	80			
EPI - Neuroticism				47
EPI - Lie Scale				
16PF - Extraversion	80			
16PF - Neuroticism				49
16PF - IQ			-33	
TRS - Extraversion	82			
TRS - Neuroticism		33		
Amount of speech	59			
Amount of pausing		33		
Proximity	-34			47
Gesturing		-72		
Gesturing while speaking		-70		
Touching the self		84		
Touching the self while speaking		85		
Touching the self while listening		60		
Nodding the head	-54			
Looking at other	-38			-78
Looking at other while speaking				-81
Looking at other while listening				-30
Smiling			90	
Smiling while speaking			78	
Smiling while listening			86	
Percentage of total variance	16%	15%	13%	9%

more valid assessments (based on self-reports) are associated with gaze aversion, a finding previously reported by Kendon & Cook (1969), Rutter & Stephenson (1972) and Williams (1974). There were a number of other interesting findings. Smiling seemed to be a characteristic individual difference regardless of whether talking or listening. Smiling while listening was negatively associated with IQ. Gesturing outwards to the other was negatively associated with touching the self, and extraverts were *not* more gesturally expressive than introverts.

In conclusion therefore it seems reasonable to suppose that there are personality or temperament differences between people that are evidenced in their non-verbal communicatory behaviours. However these personality variables are not very strong in terms of accounting for a large amount of variance. Furthermore, in looking at the interrelations between our various measures of non-verbal communication, one is as much struck by the amount of independence and specificity of behaviour as by the amount of interrelationship. Although only females participated in this study and we limited ourselves to the 'big three' personality dimensions, this conclusion concurs with data from other types of social behaviour (e.g. see Mischel, 1968; Endler & Magnusson, 1976). Thus, although it remains a possibility that such behaviours are also interrelated and form a coherent whole, there is also the possibility that much bodily communication is idiosyncratically organized in each individual.

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