

Psychopathological States and Their Effects on Speech and Gaze Behaviour*

H. Ellgring, H. Wagner and A. H. Clarke

Max Planck Institute for Psychiatry, Kraepelinstrasse 10, D-8000 Munchen 40,
Federal Republic of Germany

ABSTRACT

Internal characteristics such as depressed mood, anxiety and general negative emotions are accompanied, particularly during depressive illness, by changes in observable behaviour. Accordingly, the following questions may be examined: are intra-individual changes in speech and gaze behaviour related to changes in the internal psychopathological state? Further, do these changes occur synchronously to changes in the state of subjective well-being?

A longitudinal study was made on depressed patients. Their behaviour was observed during standardised interviews and diagnostic-therapeutic discussions held at regular intervals.

Various speech and gaze parameters were examined with respect to their coordination and their relationship to the subjective state of well-being.

Considerable variation was found in the temporal relationship amongst these variables. The results are discussed with respect to the relevance of speech parameters and the coordination of verbal and nonverbal behaviour as indicators of the psychopathological condition.

Key Words

Social interaction; depression; verbal and nonverbal behaviour; speech; looking behaviour; dyadic interaction; single case study; longitudinal study; communication and psychopathology; social psychology.

INTRODUCTION

When investigating the relationship between psychopathology and communicative behaviour it is generally assumed that specific changes in the internal state of the individual are associated with changes in communicative behaviour.

* The work reported in this paper was carried out in connection with an interdisciplinary research project on endogenous depression. The support of the Deutsche Forschungsgemeinschaft Antrag Nr. El 67/1 is also gratefully acknowledged.

The following questions are examined in this contribution: are intra-individual changes in speech and gaze behaviour related to changes in the internal psychic state? Further, do these changes occur synchronously with changes in subjective well-being?

Assuming that speech activity yields some indication of the "social energy output" during depression, it may be analogously said of the gaze behaviour, that it should yield some indication of the capacity of the individual to be receptive towards visible social information, i.e. as an indicator of "input capacity".

According to the hypothesis of general reduction in performance capacity during depression, it is to be expected that such states of higher demand should occur less, or be avoided more.

DEPRESSION AND MEASURES OF SPEECH

To date there exist few, and to some degree inconsistent reports on the relationship between depression and temporal measures of speech. Aronson and Weintraub (1967) and Hinchliffe, Lancashire and Roberts (1971a) found that depressive patients exhibited a lower rate of speech than control persons. In an early article Rutter and Stephenson (1971) reported significantly reduced speech activity during an interview situation in both schizophrenic and depressive groups as compared to a normal control group. However, in a recent publication Rutter (1977) found that during natural conversation, such patients exhibited no significantly different behaviour. Thus, it seems doubtful that consistent group differences are to be observed. The question may be posed, however, as to whether the individual exhibits notable differences in his behaviour for varying internal states.

Starkweather (1974) compared the speaking rate intrindividually over three interviews for 4 depressive patients during both depressive and improved phases. For three of the patients the speaking rate increased from 14-18% to 45-62%. With the fourth patient, diagnosed as agitated depressive, the relatively high initial values of about 60% had not changed notably after improvement. In a longitudinal study with four depressive patients, based on series of 10 or more interviews, Ellgring (1977) found a negative correlation between speech activity and depressive state. A similar, but less close relationship was found for the amount of gaze at partner.

DEPRESSION AND GAZE BEHAVIOUR

The few investigations of the relationship between gaze behaviour and depression appear no more consistent than those regarding the speech activity. The reduced amount of gaze at partner during depression reported by Waxer (1974) supports the hypothesis of reduced reception of social nonverbal information. Hinchliffe, Lancashire and Roberts (1971b) measured 23% gaze at partner in a group of depressive patients compared to 51% gaze at partner in a group of improved patients.

However, less clear results were obtained by Rutter and Stephenson (1972a) and Rutter (1977). According to Rutter (1977) both schizophrenics and controls exhibited a relative duration of ca. 55% gaze at partner, and depressives 45%, whereas patients with neurotic or personality disorders exhibited only 35%. Not surprisingly, a corresponding inconsistency is to be found in the reports concerning simultaneous looking and speaking (Hinchliffe et al. 1971b; Rutter and Stephenson 1972b; Rutter 1977). The general inconsistency of the results concerning the temporal aspects of speech and gaze may be due to the influence of various topics of conversation, as Rutter (1977) supposed or to the heterogeneity of the groups as Rutter (1973) suggested in a review article.

The question remains as to whether the reduced verbalisation and gaze found in some depressive patients is associated with a tendency towards social withdrawal; or, on the other hand, whether the influence of the situational context on some individuals is so strong that the internal psychic state is not observable at the behavioural level.

The work reported in this paper involves an approach, by means of longitudinal single case studies, to assess under which conditions and to what degree the internal state becomes manifest in the observable behaviour. In this way the application of parameters derived from such communicative behaviour for the inference of depressive state can be evaluated in more detail.

METHOD

Single case, longitudinal studies were carried out with patients who had been diagnosed for endogenous depression (ICD 296). For the present analysis only those patients were selected who had shown a notable change in their state of well-being during clinical stay. These included 5 female and 4 male patients, aged between 33 and 57 years.

The patients were videorecorded twice weekly during the course of their clinical stay. Each recording consisted of a standardised interview, followed by a period of free conversation. The patients were recorded in a dyadic situation with a psychiatrist and on alternate days, with a clinical psychologist.

The first five minutes of each standardised interview and free conversation were analysed. The number of interviews recorded for each patient ranged from 11 to 39, corresponding to one to four months clinical stay. Details of the interview and the recording procedure have been reported elsewhere (Ellgring and Clarke, 1978).

The subjective well-being of the patients was assessed by means of a self rating scale which ranged from a feeling of extreme comfort (= 0) to extreme discomfort (= 112). This assessment was administered directly before each recording.

The on-off patterns of speech and gaze of the patient and the interviewer were registered continuously by four independent observers. The reliability, as measured continuously for point-to-point agreement, was found to be 96% for speech registration and 94% for registration of gaze at the partner. The agreement between human observer and acoustic detector for speech was found to be 94%. This observation procedure yields four binary channels of information corresponding to the presence and absence of speech and gaze at partner.

A review of the relationship between subjective well-being and the speech and gaze behaviour of the patient will be dealt with in the following. First of all, these variables will be presented in detail for one patient who was found to exhibit a particularly illustrative course of depression. The remainder of the results involve a somewhat condensed description of the longitudinal data for the 9 selected patients. This is presented in a compatible form to that of Starkweather (1967), whereby the first and final interviews are compared.

RESULTS

A single case, longitudinal study of depression

The following results illustrate the different temporal courses of the subjective and behavioural variables recorded from a 57 year old female patient.

As can be seen in Figure 1, the patient's initial subjective well-being was good, indeed showing a tendency to improve until the 25th day. At this point a sudden lapse into a deep depression occurred. The subjective well-being appeared to improve until the 80th day. A slight relapse occurred between the 100th and 120th day. The patient was treated from the 29th day with Amitriptylin. The observed

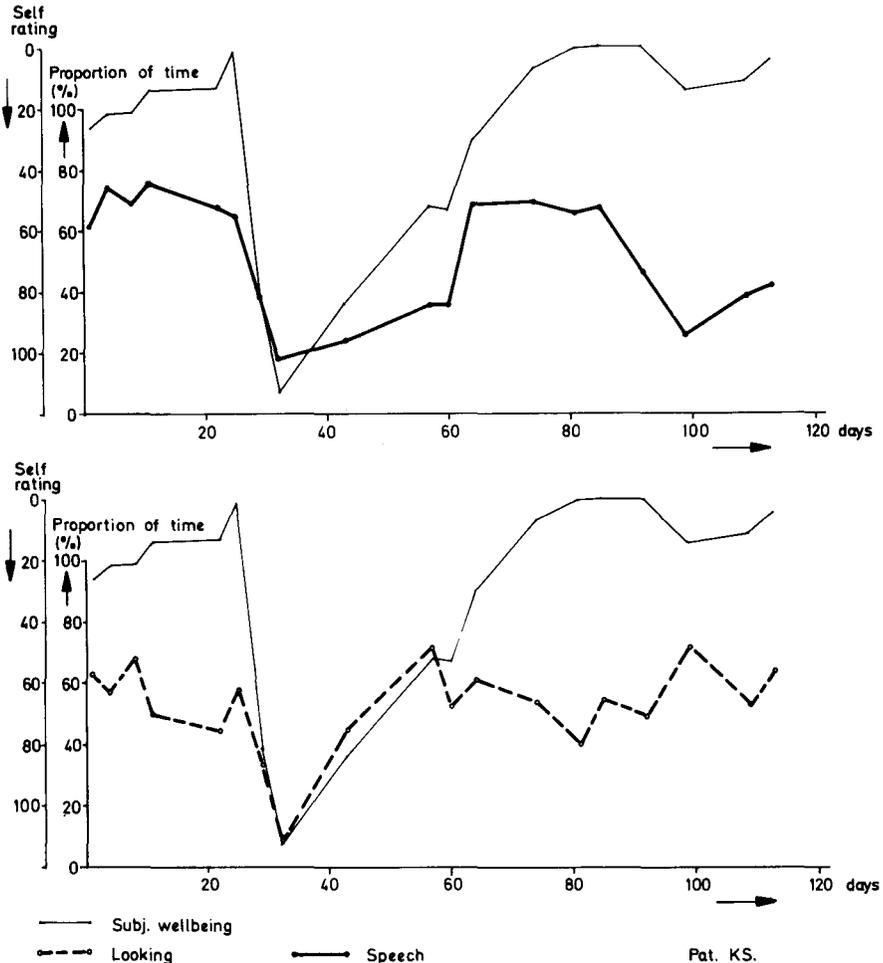


Fig. 1. Course of depression in a 57 year old female patient. (ICD 296.3)

behaviour was found in this case to correspond generally to the subjective well-being: As shown in Figure 1, the proportion of speaking was found to decrease during the depressive phase (ca. 70% to 18%). A similar reduction in the proportion of gaze at partner was found (ca. 60% to 9%). The proportion of speaking averaged over interviews 1-3 and 4-6 remained constant (mean values 70%), whereas the proportion of gaze was found to drop from 63% to 51%.

Thereafter, the proportion of gaze appears to have increased more rapidly. Between the 60th and 90th day, however, a decrease to an average value of 52% was measured. This precedes the observed relapse in the subjective well-being.

Over the final three interviews, an average level of 63% gaze at partner was measured.

There are various points of interest in this single case study. Firstly, there appeared a systematic relationship between the fluctuations of the subjective well-being of the patient and the observed behaviour. Secondly, the speech behaviour was found to fluctuate between more stable levels and with larger shifts of level than the gaze behaviour, and finally, the changes in gaze behaviour were found to occur in advance of the changes in the subjective well-being.

Intraindividual comparisons

It can be seen from Figure 2 that the relationships between subjective well-being and observed behaviour hypothesised in the introduction are not to be found in all cases.

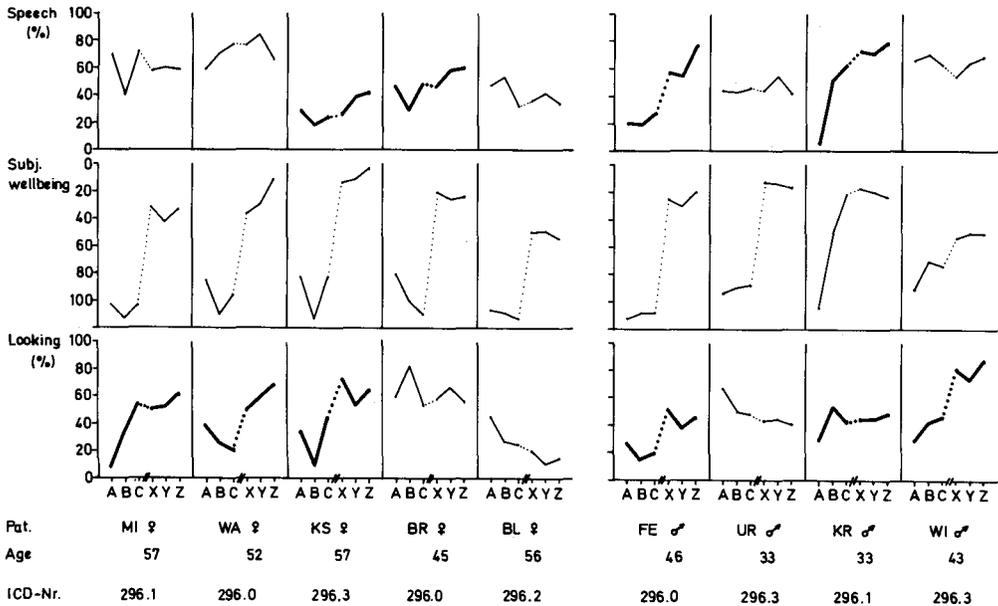


Fig. 2. Results from the longitudinal study of nine depressive patients. For each plot, values were taken for the first (A B C) and final (X Y Z) three interviews recorded during clinical stay. Heavy line sections emphasise relationship between subjective well-being and the respective behaviours. For patient KS, A B C represent interviews 7 to 9.

The proportion of speech was found to increase with clinical improvement in four of the patients, the proportion of gaze in six. In only three of the patients were both variables found to increase simultaneously.

The results listed in Table 1 indicate, for those patients who did in fact exhibit the expected changes, an average increase in speech activity between 10 and 40%, and in gaze between 22 and 41%. The patient KR attained a stable level of gaze activity as early as the second interview, and the patient MI after the third interview.

TABLE 1 Mean proportion of speech and looking at partner during initial (a) and final (b) three interviews and corresponding subjective well-being.

		Patient								
		MI	WA	KS	BR	BL	FE	UR	KR	WI
p(Speech)	a	.60	.69	.27	.42	.45	.23	.44	.40	.66
	b	.59	.75	.37	.55	.38	.63	.47	.74	.63
p(Looking)	a	.33	.28	.29	.65	.32	.20	.55	.41	.39
	b	.55	.59	.63	.60	.15	.45	.43	.46	.80
Subject	a	106	97	93	97	110	109	91	75	79
Well-being	b	36	26	10	24	51	25	15	20	51

In almost all cases where no relationship was found between behaviour and subjective well-being the average initial levels in behaviour were markedly higher than for those cases where a relationship was found.

No influence regarding the patients' age or diagnoses could be found. It appears, however, for the patients examined, that the subjective well-being of the females tended to worsen at the beginning of clinical stay.

The results of the intraindividual comparisons show that for 7 of the 9 patients, changes in at least one of the behavioural components (mainly gaze) were related to those changes observed in the subjective well-being.

DISCUSSION

The proportion of speech and looking at partner does not appear in all cases to be related to the internal state, or subjective well-being, of the patient. A pre-condition appears to be an initially low level of the behavioural activity during depression. It can therefore be expected that those patients who exhibit a low level of such behaviour during a depressive phase should also exhibit an increase parallel to clinical improvement. This agrees with the results of the single case studies carried out by Starkweather (1967) with respect to speech.

There also seems to be some evidence for the argument that behavioural changes may precede changes in subjective well-being.

It may be concluded that neither the "optimistic" view expressed by Hinchliffe, Lancashire and Roberts (1971b), "... that eye contact is recording the affective changes in the patient adequately", nor the more sceptical opinion of Rutter (1977)

regarding the indicative value of speaking and looking at partner, can be fully supported. Both variables can be shown, for particular cases, to change systematically and to some extent with a temporal shift to the patient's self-rated internal state.

The fact that such changes occurred more often in gaze may suggest that this behaviour is more independent of the situational demands than speech, i.e. possibly a certain compensation may be made in the energy output whereas the limited input capacity, as expressed by the proportion of gaze, remains uncompensated. The higher proportion of speech in those cases where no relationship exists to the subjective well-being can perhaps be explained as a coping strategy on the part of the patient to match the demand characteristic of the interview situation. There is some evidence that parameters such as utterance length may yield further information on this. The observed temporal shifts amongst the behavioural and subjective variables might further be explained as resulting from the presence of separate temporal systems governing the associated psychological levels.

REFERENCES

- Aronson, H. and Weintraub, W. Verbal productivity as a measure of change in affective status. Psychological Reports, 1967, 20, 483-487
- Ellgring, J. H. Kommunikatives Verhalten im Verlauf depressiver Erkrankungen, in W. H. Tack (Ed.), Bericht über den 30. Kongress der Deutschen Gesellschaft für Psychologie in Regensburg 1976, Bd. 2. Göttingen: Hogrefe, 1977, S. 190-192
- Ellgring, J. H. and Clarke, A. H. Verlaufsbeobachtungen anhand standardisierter Videoaufzeichnungen bei depressiven Patienten, in H. Helmchen and E. Renfordt (Eds.) Fernsehen in der Psychiatrie. Stuttgart: Thieme, 1978, S. 68-77
- Hinchliffe, M. K., Lancashire, M. and Roberts, F. J. Depression: defence mechanisms in speech. British Journal of Psychiatry, 1971(a), 118, 471-472
- Pope, B., Blass, T., Siegman, A. W. and Raher, J. Anxiety and depression in speech Journal of Consulting and Clinical Psychology, 1970, 35, 128-133
- Rutter, D. R. Visual interaction in psychiatric patients: a review. The British Journal of Psychiatry, 1973, 123, 193-202
- Rutter, D. R. Visual interaction in recently admitted and chronic long-stay schizophrenic patients. The British Journal of Social and Clinical Psychology, 1977, 16, 47-56
- Rutter, D. R. and Stephenson, G. M. Visual interaction in a group of schizophrenic and depressive patients. British Journal of Social and Clinical Psychology, 1972(a), 11, 57-65
- Rutter, D. R. and Stephenson, G. M. Visual interaction in a group of schizophrenic and depressive patients: a follow-up study. British Journal of Social and Clinical Psychology, 1972(b), 11, 410-411
- Starkweather, J. A. Vocal behaviour as an information channel of speaker status, in K. Salzinger and S. Salzinger (Eds.) Research in verbal behaviour and some neurophysiological implications. New York: Academic Press, 1967, pp.253-265
- Waxer, P. Nonverbal cues for depression. Journal of Abnormal Psychology, 1974, 53, 319-322