
Brief Report

Blink Rate and Blunted Affect Among Chronic Schizophrenic Patients

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The blink rate of schizophrenic patients has been reported to be greater than that of controls (Cegalis and Sweeny, 1979, Stevens, 1978). These patients, however, were being treated (Cegalis and Sweeny, 1979) or had been recently treated (Stevens, 1978) with antipsychotics. When antipsychotic medications were washed out the blink rate increased significantly (Karson *et al.*, 1981). It was thus still not clear whether the blink rate of schizophrenics was correlated with any psychopathology. In our study of nonverbal behaviors of schizophrenics (Kumar, 1980; Kitamura *et al.*, 1982), we found that the blink rate is negatively correlated with the severity of blunted affect.

METHOD

Nineteen chronic schizophrenic inpatients, hospitalized for more than a year, aged between 20 and 63 (mean 46.3), 15 male and 4 female, all Cauca-

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sians, were randomly selected from long-stay wards at All Saints Hospital, Birmingham. Their illnesses had lasted from 1 to 30 years.

When the interviews described below had been completed, diagnosis was reassessed by T. K. using Feighner *et al.*'s (1973) criteria of schizophrenia; 14 were placed in the "definite" category, 1 in the "probable" category, and 4 in the "nonschizophrenic" category though the case notes of the nonschizophrenic group obviously indicated some schizophrenic symptoms.

The sample patients had been medicated for at least a year. The daily equivalent chlorpromazine dose at the time of investigation was calculated for each patient (Davis, 1976) (see Table I).

Each patient was interviewed for an hour by one of us (T.K.) in the presence of a second observer (A.K.). The interview was conducted in accordance with the instructions of the Brief Psychiatric Rating Scale (BRPS), using the glossaries and rating guidelines of Kolakowska (1976). Eighteen BPRS items were completed independently by the two raters. The mean of the two raters for each item was used for the subsequent calculation after confirming its satisfactory interrater reliability (Kitamura *et al.*, 1983). Neither rater had ever been involved in the treatment of the patients.

The interviews were all videotaped by one of us (R.K.) through a one-way mirror, and he was "blind" to the content of the conversations held during the interview. He then reviewed the first 10 min of each interview on a video screen with its sound completely off. The number of blinks of each patient during the 10-min interval were counted. The blink rate was then expressed as blink counts per minute.

Twenty-three normal volunteers, 13 male and 10 female, aged 20 to 69 (mean 41.1) were also interviewed. Present State Examination (Wing *et al.*, 1974) and past history investigation revealed that they had never suffered from mental disorders of any type. Written informed consent was obtained from each subject prior to the interview.

RESULTS

The mean blink rate \pm SD was 15.2 ± 4.9 for the normal controls as against 6.9 ± 2.6 for the patients (Fig. 1) (Mann-Whitney U test, $p < 0.001$). When a cutoff point is set at 11/min only one of the 11 patients manifested blink rates higher than the cutoff point whilst 3 of 23 normal controls were below this point (Fig. 1).

All the patients were in a residual state with predominant features of emotional withdrawal (mean BPRS score 1.8), conceptual disorganization (mean BPRS score 1.7), and blunted affect (mean BPRS score 3.1). Of these BPRS items only blunted affect was significantly correlated with blink rate (Kendall's

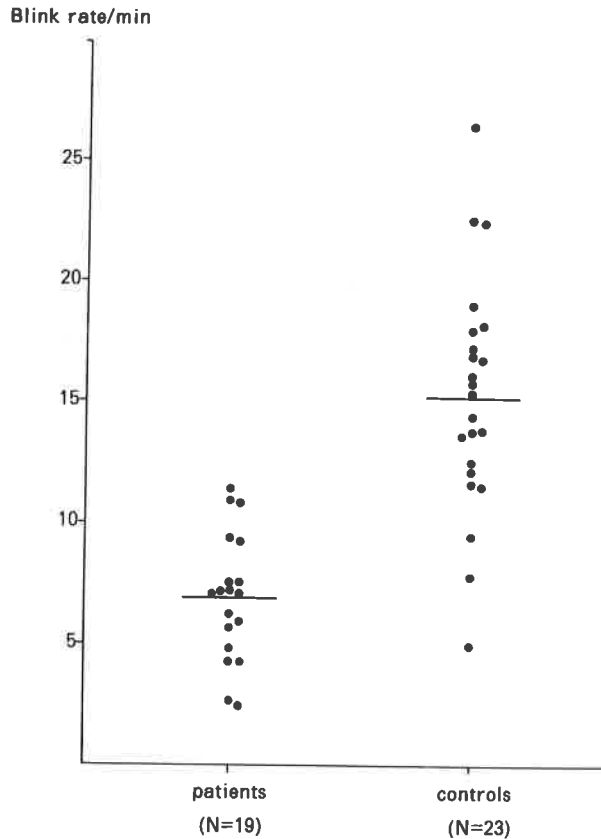


Fig. 1. The number of blinks per minute of the schizophrenics and controls. The horizontal bars express the means of the groups.

rank correlation coefficient, $\tau = -0.36$, $p < 0.05$) (Fig. 2). This was a negative correlation: the higher the blunted affect score, the less frequently did the subjects blink.

As suggested by other studies (Karson *et al.*, 1981; Karson *et al.*, 1982a), the blink rate was also negatively correlated with the daily equivalent chlorpromazine dose ($\tau = -0.34$, $p < 0.05$) whilst the latter was found to be positively correlated with the blunted affect score ($\tau = 0.37$, $p < 0.05$). When the daily equivalent chlorpromazine dose was held constant by Kendall's partial rank correlation method, the correlation coefficient between the blink rate and blunted affect score dropped to -0.27 . When the blunted affect score was held constant, the correlation between the blink rate and the daily

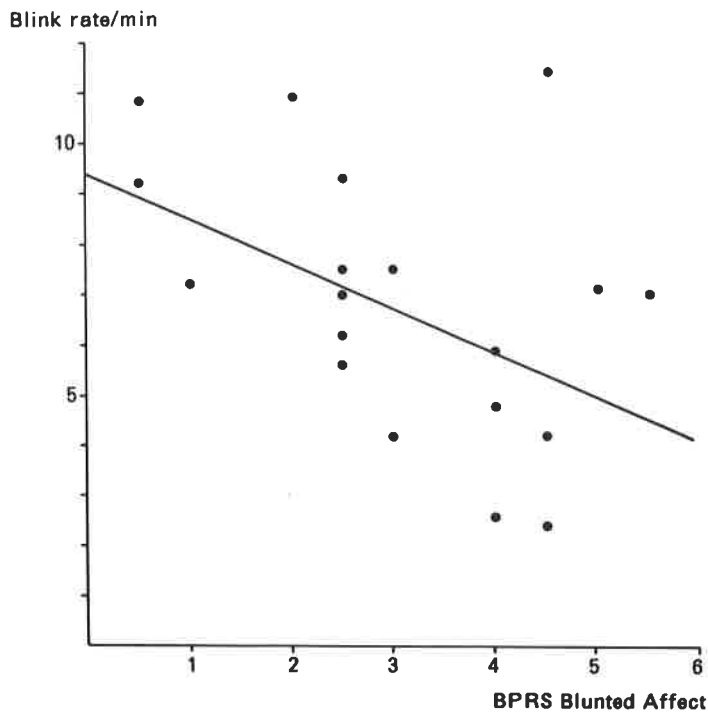


Fig. 2. The correlation of the blink rates with the BPRS blunted affect scores of the schizophrenic patients.

dose dropped to -0.24 . The correlation between the daily dose and blunted affect score also became 0.28 when the blink rate was fixed.

DISCUSSION

The present study demonstrates that chronic schizophrenics blink less frequently than normals. The mean blink rate of normal controls in our study, however, is less than that found in other studies (Karson *et al.*, 1982b). Although we have no explanation for this, it may account for some of the difference in blink rates between the patients and controls. The patients' reduced blink rate is presumably at least partially due to the suppressing effects of anti-psychotic agents on blink rate. Thus the correlation of the blink rate with the daily dose is shown to be negative.

Of interest is the finding that the correlation of the blink rate with the blunted affect score is maintained, though modestly, even when the daily equiva-

Table I. Patients' Profiles and Their Blink Rates

Patient no.	Sex	Age	Blink rate /min	Equivalent chlorpromazine dose	Mean score of blunted affect
1	M	34	10.9	64	2.0
2	M	20	11.4	1064	4.5
3	M	46	7.5	48	2.5
4	M	25	4.2	1018	3.0
5	F	35	9.3	1200	2.5
6	F	32	4.2	2250	4.5
7	F	53	7.5	179	3.0
8	F	43	7.2	223	1.0
9	M	55	2.6	4012	4.0
10	M	63	5.6	389	2.5
11	M	54	2.4	3357	4.5
12	M	51	7.0	4643	5.5
13	M	45	7.1	418	5.0
14	M	57	4.8	900	4.0
15	M	54	10.8	600	0.5
16	M	54	6.2	1946	2.5
17	M	61	9.2	—	0.5
18	M	54	7.0	143	2.5
19	M	43	5.9	120	4.0

lent chlorpromazine dose is cancelled out statistically. These findings need explanation. The interviewers may unconsciously have rated blunted affect as more severe because the patients blinked less frequently. Another possible explanation is that both the reduced blink rate and the blunting of affect are reflections of a single biological function specific to the illness or the subtype of the illness. This remains to be further investigated with a larger sample.

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