

## Judgement of Emotional Expression in Schizophrenics

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**Summary:** Acute schizophrenics, chronic schizophrenics, psychiatric controls and patients with a depressive illness were asked to judge which of two faces in photographs was the more friendly. Acute schizophrenics disagreed significantly with the other three groups of subjects whilst agreeing with them on a control task of perceptual judgement involving colours. In a second experiment a new group of acute schizophrenics disagreed with remitted psychotics and psychotic depressives in judging friendliness and meanness but agreed with these control groups in judging age of the faces. The findings are presented as a potentially fruitful area for research on psychological deficits in schizophrenia.

Kraepelin (1919) and Bleuler (1950) placed considerable emphasis on a disturbance of emotion in their original descriptions of dementia praecox and schizophrenia. Although clinicians generally accept the truth of these notions, they have been incorporated into few of the many recent empirical definitions of schizophrenia (Brockington *et al*, 1978). They have also been ignored in the otherwise extensive research into psychological deficits in schizophrenia (Chapman and Chapman, 1973). There are a number of reasons for this. Two are particularly important. A disturbance of emotion has always been difficult to rate: it had one of the lowest inter-rater reliabilities of the items in the Present State Examination (WHO, 1973). Secondly, in the last two decades psychologists have been pre-occupied with behavioural approaches to psychiatric disorders. Terms like 'drive' and 'attention' were more relevant to their models than 'emotion'.

The renewal of interest in cognitive psychology in recent years has led to some re-examination of the matter. The approach taken has been the opposite of the traditional one. Instead of asking normal people to evaluate abnormal and unreliably rateable emotions such as blunting or flatness in a schizophrenic patient, schizophrenics have been asked to evaluate normal and reliably rateable emotions such as joy and fear in normal people. In three experiments (Dougherty *et al*, 1974; Muzekari and Bates, 1977; Walker *et al*, 1980) chronic schizophrenics were worse than psychiatric controls at recognizing from pictures of faces the eight most reliably rateable emotions (joy, surprise, sadness, anger, shame, fear, interest, disgust). La Russo (1978) asked chronic schizophrenics to decide whether an actor on videotape was receiving real or simulated electric shocks. They were worse than controls at this.

Pilowsky and Bassett (1980) asked for spontaneous comments on six photographs of actors. Schizophrenics were less likely than controls to remark on the person's state of mind and tended to comment on their physical appearance. Less relevant, but of some interest, is the experiment of Griffith *et al* (1980). Schizophrenics were worse at sorting schematic faces than abstract shapes matched for complexity; controls found the faces easier.

I shall report two experiments in which I attempt to examine whether schizophrenics are impaired in judging emotional expression, with careful consideration of the many methodological problems.

### *Experiment 1*

#### *Subjects*

There were four groups. There were 20 subjects in each of the three pathological groups and 40 psychiatric controls. *Acute schizophrenics* fulfilled the broad Research Diagnostic Criteria (RDC) for schizophrenia (Spitzer *et al*, 1975). Any patient with organic brain damage, any puerperal patient and any with formal thought disorder (as defined in the RDC manual) were further excluded. The term 'acute' was defined as a continuous inpatient stay of under six months. The mean length of the current psychotic episode was three weeks and 12 patients had been psychotic on previous occasions. All were deluded or hallucinated at the time of testing and were on phenothiazines. *Chronic schizophrenics* fulfilled the RDC criteria for schizophrenia, were deluded or hallucinated at the time of testing and were on phenothiazines. They had been continuous inpatients in the long-stay wards of a mental hospital for at least one year (mean 9.8 years). Any patient with organic brain damage or leucotomy

was excluded. Eight had formal thought disorder but they also exhibited delusions or hallucinations. *Psychiatric controls* were patients attending psychiatric outpatients with no current formal psychiatric disorder and no history of a psychotic episode. They either had a personality disorder or a previous history of a neurotic disorder. None was on phenothiazines. *Depressives* were psychiatric inpatients with a major depressive episode according to the Research Diagnostic Criteria (Spitzer *et al*, 1975). They were all on antidepressants and none had been given ECT in the past year. Five patients had delusions or hallucinations.

It was not feasible to match subjects for age and sex but there were no significant differences between controls and acute schizophrenics on premorbid intelligence measured by the Adult Reading Test (Nelson and O'Connell, 1978).

#### Procedure

Subjects were asked to perform two tasks. The first was a comparative judgement as to which of two male doctors in photographs was the more *friendly*. The second task required them to decide which of two varieties of a basic colour was more *typical* of that colour (e.g. bright red and reddy-brown).

The colour task was to act as a control condition to evaluate the degree of application to a perceptual task: any deficit in performance in the faces task would have to be significantly different from performance on the colour task before an impairment in the appreciation of emotion could be accepted. Twenty cards, each showing two varieties of either red, yellow, blue or green (five of each) were presented. They were selected from an original sample of 40 cards which had been offered to 10 normal standardizers (friends and relatives) and comprised those where

at least eight of the ten normal standardizers had agreed that the same one of a pair was more typical of that basic colour.

Twenty pairs of faces were selected from an original 40 in the same way: eight of the ten standardizers agreed that one man was more friendly than the other. In addition, an attempt was made to equate difficulty of the colour and faces tasks. There were 13 instances of disagreements on typicality by the standardizers in the eventual pairs of colours and the face pairs were chosen to match this level of disagreement.

Subjects were strongly urged to select one or the other of a pair. In only 14 of 4000 possible instances did a subject fail to indicate one or the other. Such rare failures were regarded as disagreements with the standardizers as they did not significantly distort the results.

#### Results

The mean number of agreements with standardizers by subject group and task is shown in Table I. After arcsine transformation of these raw scores analysis of variance gave a significant effect to subject groups ( $F=7.4$ ;  $df=3,192$ ;  $P < 0.001$ ) but not tasks ( $F=0.27$ ;  $df=1,192$ ; NS). There was a significant interaction between subject groups and tasks ( $F=4.7$ ;  $df=3,192$ ;  $P < 0.01$ ). The only result contributing significantly to this interaction on post hoc t-tests was the acute schizophrenics' performance on faces.

The significance of this finding is well shown in Fig 1 where the individual subjects' scores are plotted. Eighteen of the 20 acute schizophrenics disagreed with the standardizers on at least seven of the 20 pairs of faces, compared with only six of the 40 psychiatric controls and five of the 20 depressives. The chronic schizophrenics showed a similar degree of agreement

TABLE I  
Agreement on friendliness

	Psychiatric controls	Depressives	Acute schizophrenics	Chronic schizophrenics
No	40	20	20	20
Age	40.6	44.6	33.1	38.6
Sex—m:f	20:20	6:14	11:9	17:3
IQ (Nelson reading test)	100.7	100.8	99.7	95.8
Colours (typical x) /20	15.7	15.7	15.5	15.1
Faces (more friendly) /20	16.6	16.4	11.7	15.3

FIG 1.—Individual plots of scores on colour and friendliness judgement by patient groups.

Score	Colours				Faces			
	Psych. cont.	Dep.	Ac. schiz.	Chr. schiz.	Psych. cont.	Dep.	Ac. schiz.	Chr. schiz.
20	xx				xxxxx	xxxx	x	x
19	xxx	x	x		xxxxxxxxxxx	xxxx	x	xx
18	xxxxxxxxx	xx	xx	xxxx	xxxxxx	xx		xxxx
17	xxxxxx	xxxxxx	xxx	xxxx	xxx	x		
16	xxx	xxx	xxxxxx	xxxx	x	xxx		xx
15	xxxxxx	xx	xxx	xxxxx	xxx			xxx
14	xx	xxxx	x		xxxxx	x		xxx
13	xxx		xxx		xx	x	xxx	xxx
12	xxxx	x			xx	x	xxxxxx	
11		x				x	xxxx	x
10	xx			x		xx	x	
9			x				x	
8					x		x	
7				x			x	
6					x			x
5				x			x	
4								
3								

Cont. = controls; Dep. = depressives; Schiz. = schizophrenics.

with the standardizers as the controls, despite being actively psychotic at the time of testing.

### Experiment 2

#### Subjects

In this experiment there were two main groups of subjects—a new group of acute schizophrenics as defined in the first experiment though with a longer duration of the current psychotic episode (mean 48 weeks), and a group of remitted psychotics. The latter group were chosen as a control on whether the findings in the first experiment were a feature of psychosis or of a personality which is prone to psychosis. They were chosen on the basis of interview and documented evidence of a previous psychosis. All were on phenothiazines at the time of testing and none admitted to current psychotic experiences or beliefs. As a further control a group of ten patients with psychotic depression were tested. These fulfilled the RDC criteria for a major depressive illness and had delusions or hallucinations. They were included to examine whether the findings generalized to other psychotic forms.

#### Procedure

Subjects were asked to perform three tasks. The first was to judge the *more friendly* man on the same set of 20 cards of Experiment 1. The second required subjects to judge which man was *older* in a new set of 20 pairs of photographs of male doctors. The third required subjects to judge which man was *meaner* in a set of 20 pairs of photographs of male actors, in natural pose.

The 'old' and 'mean' pairs were selected from 40 of each such that 15 of 20 normal subjects indicated that one man was older or meaner than the other. An attempt to equate degree of difficulty across tasks was again made. The number of disagreements with the original standardizers made by the first 20 psychiatric controls in the friendly condition of experiment 1 was taken as the standard. The eventual 'old' and 'mean' pairs were selected to match this total number of disagreements.

The judgement of age was a control task to evaluate whether a failure to appreciate facial features underlay the schizophrenics' performance in judging friend-

liness. The judgement of meanness was another evaluation of the judgement of emotional expression. All of the 'friendly' pairs contained one man smiling and one not. Many subjects expressed the opinion during that task that one cannot necessarily trust people who smile and I tried to choose pairs for the meanness judgement where neither man was smiling.

Subjects were urged to select one or the other of a pair and there were only 16 of 6000 possible instances where a subject did not decide. These were regarded as disagreements with standardizers. Order of presentation of the three tasks was randomized for subjects.

### Results

The mean number of agreements with standardizers across the three tasks and the three subject groups are shown in Table II. After arcsine transformation of raw scores analysis of variance was carried out between remitted psychotics and acute schizophrenics only. There was a significant effect of subject groups ( $F=24.2$ ;  $df=1, 114$ ;  $P < 0.001$ ) but not tasks ( $F=1.53$ ;  $df=2, 114$ ;  $P > 0.2$ ). There was a significant interaction between subject groups and tasks ( $F=3.2$ ;  $df=2, 114$ ;  $P < 0.05$ ). This was accounted for by the greater number of disagreements with standardizers by the schizophrenics on the friendly and mean tasks. The individual scores are plotted in Fig 2.

Fewer acute schizophrenics than in the previous experiment were below a cut-off point of 13 agreements but there were still more than half below this point. Only two of the 10 psychotic depressives fell below this point.

### Discussion

The first experiment showed that a group of acute schizophrenics disagreed to a significant extent from

psychiatric controls, patients with a depressive illness and chronic schizophrenics on a relative judgement of friendliness from photographs of two men. It showed that this result could not be attributed to a general lack of application to perceptual tasks because they agreed with the other groups on a colour judgement task. It suggested that medication, preoccupation with psychotic experiences and other factors related but not essential to an acute psychotic episode did not affect their performance, because chronic schizophrenics performed like non-psychotic controls.

The second experiment addressed itself in more detail to the type of task where their judgements differed from controls and the type of patient who made these abnormal judgements. The acute schizophrenic group agreed with controls in judging age, suggesting that it was not a lack of appreciation of facial features which was responsible for their particular judgement of friendliness. Further, it appeared that they did not simply distrust smiling people. Secondly, the abnormal judgement was not seen in the large majority of remitted psychotics nor psychotic depressives, suggesting that it was neither a premorbid feature in those prone to psychosis nor common to all acute psychotic conditions.

Although one can draw hazy boundaries of the type of task and the type of patient where the particular judgement appears, this still leaves open a number of possibilities within each. First, I had no manic or organically psychotic controls, and no patients with a paranoid psychosis outside the RDC definition of schizophrenia. Secondly, one could argue that the only difference between the 'friendly' and 'mean' tasks on the one hand and the 'colour' and 'age' tasks on the other is essentially one of complexity. It may be that acute schizophrenics find complex tasks of whatever

TABLE II  
*Agreement on age, friendliness and meanness*

	Remitted psychotics	Psychotic depressives	Acute schizophrenics
No	20	10	20
Age	39.6	40.0	37.9
Sex—m:f	9:11	5:5	6:14
IQ (Nelson reading test)	101.7	105.3	101.2
Age (older /20)	16.5	15.2	15.7
Friendliness (more friendly /20)	16.9	15.4	13.2
Meanness (more mean /20)	16.5	15.7	12.9

FIG 2.—Individual plots of scores on age, friendliness and meanness judgement.

Score	Age			Friendliness			Meanness		
	Rem. psych.	Psych. dep.	Ac. schiz.	Rem. psych.	Psych. dep.	Ac. schiz.	Rem. psych.	Psych. dep.	Ac. schiz.
20		x		xxxx	x	x	x		
19	xx		xx	x		x	x		x
18	xxxx	x	xxxx	xxx	xx	x	xxxxxx	xx	x
17	xxxx	x		xxxx	x	xxxx	xxxx	xx	
16	xxxxxx	xx	xxxxxx		xxx	x	xxxx	xxx	xx
15	x	x	xxxx	xx	x			xx	xxx
14	xx	xx	xx	xxxxx		x	xx		x
13		x					x		xxx
12	x					xxx			xxx
11			x			x			xx
10					x	xx	x		
9		x				xxx		x	xx
8			x		x	x			x
7						x			
6									x

Rem. Psych. = remitted psychotics; Psych. Dep. = psychotic depressives.

kind harder. Fewer cues may be necessary to judge age (e.g. bald head, wrinkles). The literature on psychological deficits in schizophrenia is so contradictory that one can support any case from it. However, in another experiment (Cutting, in preparation) evaluating thought disorder, the same acute schizophrenics who took part in the first experiment were as good as controls on a task involving complex judgements of semantic category membership, whereas chronic schizophrenics were impaired. This suggests that it is complex perception rather than complex tasks in general where acute schizophrenics differ from other psychiatric groups. The task where their judgement disagreed with controls involved judgement of emotion in others but whether this is attributable to some more basic perceptual abnormality can only be clarified by further investigation.

The two experiments are presented as preliminary studies in an area which has taxed psychiatrists and psychologists ever since Kraepelin and Bleuler's description of schizophrenia. Further research in this area might prove useful both in improving the psychopathological criteria for subdividing the major psychoses and more generally in clarifying the psychological substrate which underlies the raw psychopathological manifestations of psychosis.

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#### References

- BLEULER, E. (1911) *Dementia Praecox*. English translation, 1950 by J. Zinkin. New York: International Univ. Press.
- BROCKINGTON, I. F., KENDELL, R. E. & LEFF, J. P. (1978) Definitions of schizophrenia: concordance and prediction of outcome. *Psychological Medicine*, **8**, 387-98.
- CHAPMAN, L. J. & CHAPMAN, J. P. (1973) *Disordered Thought in Schizophrenia*. New York: Appleton-Century-Crofts.
- DOUGHERTY, F. E., BARTLETT, E. S. & IZARD, C. E. (1974) Responses of schizophrenics to expressions of the fundamental emotions. *Journal of Clinical Psychology*, **30**, 243-6.
- GRIFFITH, J. H., FRITH, C. D. & EYSENCK, S. B. G. (1980) Psychotism and thought disorder in psychiatric patients. *British Journal of Social and Clinical Psychology*, **19**, 65-71.

- KRAEPELIN, E. (1919) *Dementia Praecox*. Translated by R. M. Barclay. Edinburgh: E. & S. Livingstone.
- LA RUSSO, L. (1978) Sensitivity of paranoid patients to non-verbal cues. *Journal of Abnormal Psychology*, **87**, 463-71.
- MUZEKARI, L. H. & BATES, M. E. (1977) Judgement of emotion among chronic schizophrenics. *Journal of Clinical Psychology*, **33**, 662-6.
- NELSON, H. E. & O'CONNELL, A. (1978) Dementia: the estimation of premorbid intelligence levels using the new adult reading test. *Cortex*, **14**, 234-44.
- PILOWSKI, I. & BASSETT, D. (1980) Schizophrenia and the response to facial emotions. *Comprehensive Psychiatry*, **21**, 236-44.
- SPITZER, R. L., ENDICOTT, J. & ROBINS, E. (1975) *Research Diagnostic Criteria*. New York: New York State Psychiatric Institute.
- WALKER, E., MARWIT, S. J., & EMORY, E. (1980) A cross-sectional study of emotion recognition in schizophrenia. *Journal of Abnormal Psychology*, **89**, 428-36.
- WHO (1973) *International Pilot Study of Schizophrenia*. Geneva: World Health Organisation.

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