Acta psychiat. scand. (1982) *65*, 415–420

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Time passes slowly for patients with depressive state

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Twenty-three depressive inpatients and the same number of matched non-psychiatric controls were examined on three occasions – following admission, 14 days after, and 28 days after the admission – by administering a self-rating questionnaire of time awareness and Hamilton's Rating Scale for Depression (HRS). The patients were found to feel time passing slowly. This was correlated with the severity of depression expressed as the total HRS score. No significant differences emerged between diagnostic groups, namely endogenous depression, neurotic depression, and schizophrenia or paranoid state with depressive symptoms. Correlations of the time awareness with symptoms listed in the HRS also denied a specific relationship of time awareness to specific diagnoses. The subjective feeling of slow time flow reflects, therefore, the depth of depressive state in general, which is nevertheless not specific to any diagnostic subcategory.

Key words: Depression – time perception.

It is expected that time "stands still" when one feels "downhearted". Indeed it has been clinically and experimentally obeserved that depressives feel time passing slowly (*Straus* (1947), *Mesey & Cohen* (1961), *Lehman* (1967), *Bech* (1975), *Wyrick & Wyrick* (1977). This phenomenon is given many descriptions, for example time sense, time perception, time experience, and time awareness. The first three, however, are often referred to as generic terms to cover many other related phenomena whilst "time awareness" (*Lehman* (1967)) specifically indicates a faculty of "subjective judgement of the passage of time (*Solomon* (1950)). The term time awareness (TAW) will be used in this article.

The difference between endogenous and reactive depressions had been paid little attention until 1975 when *Bech* claimed in his study of 52 depressives that the subjective feeling of slow time flow was specific to the depressive mood (a common symptom in both endogenous and reactive depression) but not to psychomotor retardation (a characteristic feature of endogenous depression).

Most of the past investigations were unfortunately insufficient in that they did not employ an explicit diagnostic criterion, a reliable rating scale, a matched control group or a subsequent follow-up study.

In order to overcome these drawbacks, it was designed in this study to select patients from a variety of subcategories of depressive state using the Present State Examination and its Catego system, to study matched non-psychiatric controls, and to examine them over three separate occasions so that comparison within as well as between the groups would be possible.

This report is a part of the extended study on a variety of aspects of time perception of depressive patients, which is now in progress.

0001–690X/82/060415–06 $02.50/0

MATERIAL AND METHODS

Samples

Twenty-three consecutive new inpatients in All Saints Hospital, Birmingham, England (13 males and 10 females, aged 20 to 66 (mean 42.4)) whose main complaint was depressive mood, were examined regardless of their clinical diagnoses. Patients were excluded if they were aged more than 70, mentally subnormal, epileptic, had an organic lesion or were admitted on an order.

Diagnosis was established by the Present State Examination (PSE) and its Catego computer system (*Wing et al.* (1974)). The patients were divided into the following three diagnostic subcategories:

I. Endogenous depression (E) ($n = 14$, mean age ± s.d. 40.4 ± 14.2 years); Catego main classes D+, D?, R+, and R? are included.

II. Depressive or anxiety neurosis (N) ($n = 5$, mean age ± s.d. 44.4 ± 17.6 years); Catego main classes A+, A?, N+ and N? are included.

III. Schizophrenia or paranoid state with depressive symptoms (S) ($n = 4$, mean age ± s.d. 46.8 ± 11.5 years); Catego main classes S+, S?, P+, O+ and O? are included.

The patients were given a variety of treatments but within an individual the treatment regimen was rarely changed. The full details of the effects of treatment on the time perception tests will be discussed elsewhere (*Kitamura,* in preparation).

The same number of normal volunteers matched for age, sex and race completed three interviews by the same method. They comprised 14 hospital domestic workers, five nurses, one retired nurse, one finance officer, one social worker, and one teacher. PSE and the past history investigation revealed that they had never been mentally ill.

Written informed consent was obtained from every subject prior to the experiment. Permission was given by the Local Ethical Committee.

Interview

Three interviews were given to each subject, the first following admission, the second 14 days after admission, and the last 28 days after admission. Each interview was held in the same room between 1 and 4 p.m. The procedure for each interview was the same. It takes approximately 45 min, during which Hamilton's Rating Scale for Depression (HRS) (*Hamilton* (1960)) was completed and a Time Awareness Test administered.

Time Awareness Test

This is a self-rating questionnaire originating from *Solomon* (1950) consisting of nine situation-dependent questions ("when I read ..." (TAW1), "when I am eating ..." (TAW2), "when I am alone ..." (TAW3), "when I am with people ..." (TAW4), "when I participate in recreational activities ..." (TAW5), "when I am busy ..." (TAW6), "when I am idle ..." (TAW7), "when I walk ..." (TAW8), and "when I am judging time in an experiment ..." (TAW9)), and one general question "I find time passes ..." (TAW10), for each of which only one answer is allowed out of "very slowly" (1 point), "slowly" (2 points), "neither slowly nor

Table 1. *Mean scores (± s.d.) of the total TAW score of the patients and the controls in the three interviews*

Interview	Patients	Controls	P
1 st	2.97 ± 0.51 (23)	3.31 ± 0.22 (23)	*
2 nd	3.14 ± 0.59 (23)	3.27 ± 0.32 (23)	N.S.
3 rd	3.25 ± 0.53 (23)	3.25 ± 0.24 (23)	N.S.

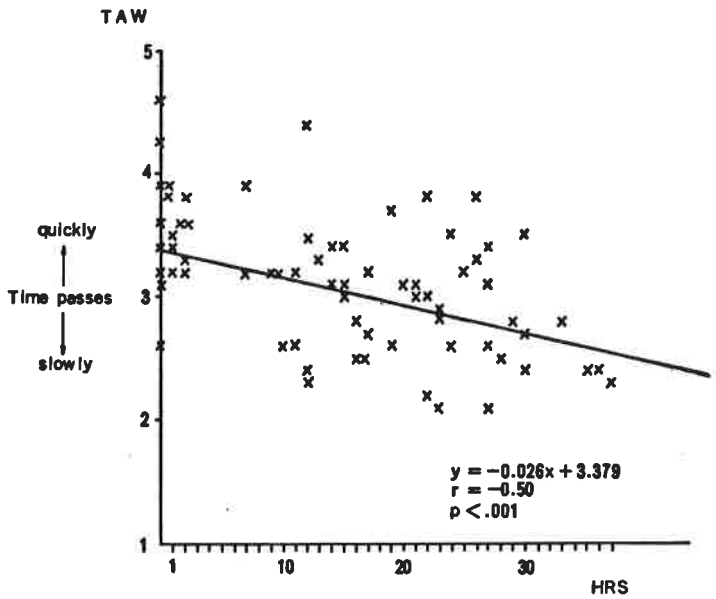
P = P value of Wilcoxon matched-pairs signed-rank test.
N.S. = Not significant.
* = $P < 0.05$.

quickly" (3 points), "quickly" (4 points), and "very quickly" (5 points).

The total TAW score was calculated by dividing the sum of score of each item by the number of answered questions, so that the possible range of the total TAW score is 1.0 to 5.0.

Statistical analysis

Data were analysed with the aid of the Statistical Package for the Social Sciences



TAW: Time Awareness Test (total score).
HRS: Hamilton's Rating Scale for Depression (total score).

Fig. 1. *Correlation of the total TAW score with the total HRS score.*

Table 2. *Mean scores (± s.d.) of the total TAW score of the "improved" and "not-changed" groups in the three interviews*

Interview	"Improved"	"Not-changed"	P
1 st	2.96 ± 0.55 (17)	3.00 ± 0.44 (6)	N.S.
2 nd	3.24 ± 0.61 (17)	2.87 ± 0.47 (6)	N.S.
3 rd	3.39 ± 0.53 (17)	2.87 ± 0.27 (6)	*

The improvement is defined as more than 50 % reduction of the total TAW score of the third interview as compared with that of the initial interview.
P = P value of two-tailed Mann-Whitney U test.
N.S. = Not significant.
* = $P < 0.05$.
( ) = Number of cases.

(*Nie et al.* (1975)) and its Expansion and Modification Manual (University Computing Service Leeds (1979)). Two-tailed non-parametric tests were applied (*Siegel* (1956)).

RESULTS

The normals' scores remained unchanged throughout the three interviews whereas the patients as a whole showed a lower score (i.e. they felt time passing slowly) in the first interview and approximated to normal awareness in subsequent interviews (Table 1).

Although this finding suggests relationship between depressive state and the subjective feeling of slow time flow, it may be interpreted that the results were biased by hospital admission.

This interpretation, however, can be ruled out by two findings. Firstly, the severity of depression, expressed by the total HRS score, was found to be negatively correlated with the total TAW score ($r = -0.50$, $P < 0.001$) (Fig. 1).

Secondly, when the clinical improvement was defined as more than 50 % reduction of the total HRS score over the 4-week treatment period, it was found that the "improved" group ($n = 17$) manifested a significant increase of the total TAW score throughout the three interviews (Friedman's two-way analysis of variance $P < 0.05$) whilst the "not-changed" group ($n = 6$) did not (Friedman's two-way analysis of variance N.S.) (Table 2). The difference of the TAW scores between the "improved" and the "not-changed" groups was not significant in the first and second interviews. In the last interview, however, the total TAW score of the "improved" significantly (two-tailed Mann-Whitney U test, $P < 0.05$) exceeded that of the "not-changed".

No significant differences emerged between the three diagnostic groups on each interviewing occasion (Table 3).

The total TAW score was negatively correlated with, out of the symptoms listed in the HRS, "work and interest" ($P < 0.001$, Kruskal-Wallis one-way analy-

Table 3. *Mean scores (± s.d.) of the total TAW score of the patients of the three diagnostic groups in each interview*

Interview	"E"	"N"	"S"	
1st	2.96±0.54(14)	2.84±0.51(5)	3.18±0.46(4)	NS
2nd	3.12±0.69(14)	3.16±0.18(5)	3.20±0.67(4)	NS
3rd	3.34±0.63(14)	3.08±0.28(5)	3.18±0.40(4)	NS

"E" = Endogenous depression (Catego main classes D+, D?, R+, and R?).
"N" = Depressive or anxiety neurosis (Catego main classes A+, A?, N+, and N?).
"S" = Schizophrenia or paranoid state with depressive symptoms (Catego main classes S+, S?, P+, O+, and O?).
P = P value of two-tailed Kruskal-Wallis one-way analysis of variance.
( ) = Number of cases.

sis of variance), "depressive mood" ($P < 0.01$), "general somatic" ($P < 0.01$), "middle insomnia" ($P < 0.05$), "hypochondriasis" ($P < 0.05$), and "loss of weight" ($P < 0.05$). Some other symptoms, namely "guilt", "agitation", "psychic anxiety", and "insight" were correlated with some of the TAW subitems though not with the total TAW score. The remaining symptoms, "suicide", "initial insomnia", "delayed insomnia", "retardation", "somatic anxiety", "gastrointestinal symptoms", and "genital symptoms" had no correlation with the total TAW score and any of its subitems.

Neither age nor sex showed significant correlations with the total TAW score.

DISCUSSION

The present study has confirmed the previous literature that when one feels depressed one also feels time passing slowly. The TAW score was significantly correlated with the global severity of depressive state. Only when the patients clinically improved, was the total TAW score normalized. It is therefore unlikely that the findings are due to a constitutional or environmental (hospital admission) factors.

Although it was suggested that the subjective feeling of slow time flow was significantly correlated with the severity of depressive state, it remained to be investigated whether it is related to a specific diagnostic category or symptom.

The significant correlation of the TAW score with some of the endogenous symptoms of depression, namely "loss of weight" and "work and interest" suggests that the subjective feeling of slow time passage is related to endogenous aspects of depression. Nevertheless, some other endogenous symptoms, namely "retardation", "delayed insomnia", "suicide" and "genital symptoms" turned out to have no correlation with the total TAW score. Furthermore the means of the total TAW score were not different for the three diagnostic groups, including even schizophrenia with depressive symptomatologies.

The results indicate that the subjective complaints of slow time flow is diagnostically non-specific and reflects the depth of depressive states in general.

Since, however, the number of cases, particularly in the "N" and "S" groups is small, this exclusion remains tentative and needs further verification.

ACKNOWLEDGEMENTS

The authors wish to thank Prof. *H. Hosaki,* Keio Gijuku University, and *Sir William H. Trethowan,* the University of Birmingham, for their supervision, Dr. *N. W. Imlah,* Medical Director, and all consultant psychiatrists of All Saints Hospital, who gave us the opportunity to examine their patients. Thanks are also due to the medical and paramedical staff of the hospital and the authors' colleagues, particularly Mr. *P. Green* and Mrs. *L. Rees.*

PSE data were kindly processed by Prof. *J. K. Wing,* MRC Social Psychiatry Unit, Institute of Psychiatry, London.

R.K. was financially supported by a Research Grant of the West Midlands Regional Health Authority.

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Received January 3, 1982

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