TIME ESTIMATION AND PERSONALITY

By

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Introduction and Method

Recent time estimation studies (e.g. Loehlin 1959, Frankenhaeuser 1959, Wallace and Rabin, 1960) although carrying on studies dating back to the time of Vierodt and Wundt, suggest that time experiments merit more attention in modern psychology and psychiatry. Two omissions are (*a*) the time estimation of periods longer than one or two minutes and (*b*) the possible relation of individual variations of these estimates with individual personalty variations of a normal and abnormal kind. Everyday anecdote and observation in fact, do suggest a relationship in stressing how the passage of time varies with differing emotional states, even in normal people. In clinical groups striking variations of time experience have been recorded (see e.g. Dubois, 1954).

Experimentally, therefore, time estimation work has been largely restricted to small time intervals (such as a minute and less) and with normal people as subjects. The present study reports on the estimation of 30 and 20 minutes. Subjects being interviewed and psychologically tested in an ordinary setting were asked after 30 (or 20) minutes had elapsed, "How long have we been talking together, how long does it seem to you?" This mode of questioning seemed to prevent too "objective" a calculation from the various cues available on the one hand or too much exaggeration on the other. In fact, from the total series, only one subject made a distinction between the two halves of the question. "It seems like hours but I would say it was half an hour!"

The subjects were not in any way prepared for this question to be asked. It must be stressed at this point that the results of this study, i.e. verbal estimation without prior warning on an elapsed 30 (or 20) minutes, cannot be directly compared with studies of other, much smaller intervals. Loehlin (op. cit.) for example, shows that the estimation of seconds is not correlated with the estimation of minutes. Nor can the verbal estimate method be compared with other time estimate methods (e.g. comparison, productive, reproductive) as again (Loehlin, Frankenhaeuser op. cit., Clausen, 1950), correlations between methods are frequently small or even absent.

Results

With the 30 minute estimates, clinical groups of 30 each were studied, these being routine hospital cases with a psychiatric diagnosis. A control group of 67 extramural students and nursing cadets were also studied. Table 1 gives an abbreviated version of the distribution of estimates, together with the medians and semi-interquartile ranges for each group. In full, the distribution is clearly non-parametric, largely because of a multimodal trend and the tendency to give round number estimates.

It can be seen from Table I that the control group's median estimate is less than the actual time. As such, this is in keeping with the literature, largely on much smaller intervals (see Loehlin op. cit.) that normally, a "filled" interval

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(as opposed to an "unfilled" one doing "nothing") is generally verbally underestimated.

TABLE I

Verbal estimates of a 30 minutes interval

	N	Frequency distribution of estimates					Median	S.I.Q.R.
		1–10′	11–20′	21–30′	31–60′	60+′		
1. Psychopaths	30	2	8	10	9	1	30	12·5
2. Hysterics	30	1	6	15	7	1	30	11·25
3. Mental Defectives	30	8	6	8	7	1	30	15·75
4. Organics	30	3	8	15	3	1	30	5·0
5. Controls	67	4	24	30	8	0	25	5·0
6. Schizophrenics	30	3	13	7	7	0	20	8·75
7. Melancholics	30	2	18	7	3	0	20	7·5
8. Anxiety States, Neurotic Depressives	30	4	17	8	1	0	20	5·0

Using the combined median test, the differences between the frequency distributions of groups 1 and 7, 2 and 7, 2 and 8 are statistically significant at a 1 per cent. level and between groups 1 and 8 at a 5 per cent. level.

It can be seen also that there are differences between certain of the groups with regard to their estimates. Each pair of groups was statistically examined by the combined median test in view of the non-parametric score distribution. The following differences were statistically significant (1) psychopaths versus melancholics (0·01), (2) psychopaths versus anxiety states and neurotic depressives (0·05), (3) hysterics versus melancholics (0·01), (4) hysterics versus anxiety states and neurotic depressives (0·01).

The results of the 20 minute estimates study are shown in Table II. The clinical groups each contained 30 subjects and the control group 20. The overall picture is the same as with the 30 minute estimates. Statistically the difference between groups 1 and 6 is significant (0·01).

TABLE II

Verbal estimates of a 20 minutes interval

	N	Frequency distribution of estimates				Median	S.I.Q.R.
		1–10′	11–20′	21–30′	31+		
1. Psychopaths and Hysterics	30	3	19	3	5	20	6·25
2. Organics	30	8	10	6	6	19·5	10·0
3. Controls	20	5	13	1	1	16	5·0
4. Mental Defectives ..	30	10	6	10	4	15	10·0
5. Schizophrenics	30	10	16	4	0	15	5·0
6. Melancholics, Anxiety States, Neurotic Depressives	30	13	15	2	0	11	2·5

Using the combined median test, the differences between the frequency distributions of groups 1 and 6 is statistically significant at a 1 per cent. level.

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Discussion

The results seem of interest in that hysteric and psychopathic groups give divergent time estimates compared with neurotically or psychotically depressed and anxious patients. In this respect, it might be noted that the mental defective groups contained a high proportion of subjects who might more adequately be labelled psychopathic. The normal groups completed the Maudsley Personality Inventory (Jensen, 1958) but neither the "neuroticism" nor "extraversion" scores showed any association with time estimates. This might be thought a little surprising with regard to the extraversion scale in the light of the noted differences between the clinical groups, but, in fact, (Eysenck, 1959), apart from other considerations, this scale has not been as successful in differentiating neurotic groups as would have been expected from Eysenck's hypotheses.

One pointer to explaining the obtained difference would be a contrast between those groups showing an intensity of affect and those groups showing too little affect, the controls coming roughly midway. As such, further hypotheses could then be invoked involving constitutional or acquired differences in affective experience and such mechanisms as dissociation of affect or repression of affect. It also seems possible that the affect in question has to be unpleasant, 6 manics for example, not included in the present tables, tended to estimate more like the hysteric and psychopathic groups than the depressed ones.

Whatever the explanation, these results seem sufficiently striking to merit further study. How far they can be linked with other results using smaller intervals and different methods is too complex a problem to discuss here but as noted earlier, no straightforward comparison seems possible. On the other hand this method would appear to come near to experimentally measuring varying experiences that are reported in relation to the passage of time.

The results seem sufficiently striking in fact to suggest that they might well correlate with important personality differences. Further study in this direction might, in fact, throw light on the nature of certain personality traits.

Lastly, age and intellectual differences were not found to be of any importance here. Also, particular organic pathology or schizophrenic subcategory seemed of no significance. The schizophrenic group were new admissions to hospital. Possibly more chronic schizophrenics would perform differently, as suggested by Lanzkron and Wolfson's (1958) study showing a marked disturbance of time calculation in chronic schizophrenics with regard to stating their age.

Summary

It is frequently stated that the passage of time subjectively varies with differing moods and environments. With psychiatric cases, a marked discrepancy between clock and personal time is frequently reported. However, experimental time estimation studies have not tended to pay attention to abnormal groups or relatively long time intervals. This study reports the verbal estimates, unprepared, of 30 minute and 20 minute "filled" intervals. Contrasted with controls, hysteric and psychopathic groups give longer estimates, neurotic and psychotic depressives give shorter estimates. These clinical groups, in fact, give statistically significant differences in the estimates of the subjects.

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