

effect could then have been removed as a covariate leaving less variance to be accounted for by the differences between diagnostic groups. I hope, sir, that you will join me in suggesting to the authors publication of the regression equation between age and log blood flow, as it should be a valuable assistance to others working with this measure. As in all psychophysiology, it is essential to reduce to a minimum variation from factors that influence the measure—not to do so verges on travesty when the necessary information has already been collected.

To summarize: I advocate logarithmic transformation of forearm blood flow measurements before the statistical analysis; examination of the response induced by a stimulus in terms of change from the initial level; the use of analysis of variance rather than separate tests of significance between the diagnostic groups of themselves; and the correction for age of the patient by application of the appropriate regression equation. The challenge for this technique is how far it can contribute to the clinical decisions affecting an *individual* patient with anxiety. Kelly, Walter and Sargent (*Journal*, September, 1966, p. 87) suggest that with regard to one treatment it promises well, but there is evidence now that clinical science can contribute more to the art of psychiatry.

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DEAR SIR,

Dr. Aitken, in his letter, raises some interesting points about the statistical analyses used in our recent paper (*Journal*, May, 1968, p. 611). He suggests that it would have been more appropriate to have used log transformations, rather than raw "basal" forearm blood flow values. His criticism is

most valuable; in our experience, however, it usually makes very little difference.

We preferred to keep our data as near as possible to observed physiological events because we felt that this would be more easily followed by the majority of clinical psychiatrists reading our paper. However, the log transformations for "basal" forearm blood flow have now been calculated (Table I). It will be seen that although heterogeneity of variance has now decreased from a Chi Square of 29.85 (Bartlett's Test) for raw data to one of 17.63 for log data, it has not disappeared altogether. (A Chi Square of 16.92 with 9 df. is required for significance at the .05 level.)

TABLE I
Log "Basal" Forearm Blood Flow

	N	Mean	S.D.
Chronic anxiety ..	41	.6318	.1186
Agitated depression ..	15	.5302	.1302
Schizophrenia ..	20	.4889	.1686
Obsessional neurosis ..	20	.3994	.1485
Phobic state ..	32	.3173	.1894
Hysteria ..	9	.3004	.1982
Non-agitated depression	43	.3046	.1523
Personality disorder ..	15	.2564	.1506
Derpersonalization ..	8	.1900	.2810
Normal control ..	60	.3085	.1777

With regard to differences among group means, analysis of variance of the log transformation of "basal" forearm blood flow for the ten diagnostic groups resulted in a F ratio of 18.04 with 9 and 253 df. For the untransformed data, the analogous F ratio is 20.92. Both values are, of course, highly significant. Using the original raw data and applying Duncan's New Multiple Range Test to the differences among diagnostic groups, all significant differences reported in our paper remained significant at or beyond the .05 levels with the exception of the difference between non-agitated depression and obsessional neurosis. We have never claimed that the "basal" forearm blood flow *alone* could be used on an individual basis to distinguish between diagnostic categories: to do so would be unjustifiable because of the considerable overlap between the groups.

The letter also raised the question of reactivity of forearm blood flow to stress. We reported "stress" levels but realized that these are subject to many variables that are difficult to control. Not only does the "Law of Initial Value" operate, but response specificity of a particular autonomic variable as Lacey *et al.* (1953) have shown, may mean that one person responds to a stressful situation with a large increase in heart rate, while another person may

respond to the same stimulus with a marked increase in palmar sweating. Ackner (1956) has also emphasized that subjects may be exposed to comparable stimuli, but the emotional significance of a given stimulus to the individual determines the occurrence and to a large extent the severity of the bodily response to it. For these reasons we felt that even the most elaborate statistical treatment would not overcome all the problems so we reported "stress" results in general terms. We did not report significant differences between "stress" values, but merely used percentage changes as a simple measure of reactivity, though aware of the limitations. It is because of the difficulties inherent in the making of "stress" measurements that we have concentrated predominantly on "basal" values.

We doubt the validity of Dr. Aitken's analogy between the increase in skin conductance and increase in forearm blood flow. While agreeing that change in conductance is proportional to the number of active sweat glands, we do not know of evidence to suggest that increase in forearm blood flow is related to the number of dilated arterioles. It seems more probable that this measure is dependent rather on the degree of dilatation of the available arterioles.

The effect of age on forearm blood flow was the subject of a previous paper (Imms and Kelly, 1966). In our paper we quoted the significant increase in "basal" blood flow with age in normal controls but when all the groups were combined ($n = 263$) the overall correlation was only $+0.117$. However, the degree of correlation showed a wide range of scatter between the diagnostic groups from an $r + 0.38$ (agitated depression) to an $r - 0.20$ (non-agitated depression). For log "basal" forearm blood flow, the correlation coefficient with age for all the groups combined was $+0.125$, and the "b" coefficient for the combined within regression was only $.0019$. Using analysis of covariance, with age as the controlling variable, mean difference among the ten groups on "basal" forearm blood flow yielded an F ratio of 21.06 . (It had been 20.92 without age adjustment.) The corresponding ratios for log transformations were 18.10 and 18.04 respectively. Thus correction for age appears to have had very little effect on the data and does not alter any of our previous conclusions.

We would like to thank Dr. John Shaffer for his valuable statistical advice.

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INTERACTION OF ENVIRONMENT AND THERAPY IN THE SUCCESSFUL TREATMENT OF A DRINAMYL ADDICT

DEAR SIR,

Although it might be thought that those people most closely connected with a young drug addict would be delighted to see the patient recovering from his disorder, it is possible that his immediate circle may react strongly against any alteration in the patient's way of life and behaviour. While treating a young drinamyl addict for social anxiety (Kraft, 1968), attention was paid to the responses of family and friends to his improvement, and this report is based upon these observations.

When the young patient was admitted to hospital for the treatment of his drug addiction, his father, aged 50, developed panic attacks, in which he felt that he was about to die. The father, although realizing that he should be pleased at his son receiving a course of treatment, felt that he was in need of treatment himself, and decided to register as a patient at the hospital. He was given a supply of nortriptyline 25 mg. t.d.s. and chlordiazepoxide 10 mg. t.d.s.

Three months later, when the son's treatment was nearing completion, the father returned from his work in a highly distressed state, saying repeatedly: "I'm going mad! I must go somewhere!" The son, bewildered by his father's behaviour, suggested that he might like to contact the therapist. The father complained of anxiety at work and of a constant feeling of fright and confusion. Although he was pleased that his son had become "a different person", his deterioration coincided with the son's improvement. When entering a public house he felt that he wanted to avoid the other people and constantly watched for closing time. He did not connect his own symptoms with his son's improvement, but accepted the argument that the son had similar difficulties in social situations before treatment, and that he had masked these by taking drugs and so had served as a projection of the social anxieties of his father.

The patient's mother, aged 43, noticed a change in her son during the first seven weeks of treatment, saying that he had become a man and was no longer a helpless child. She admitted finding adjustment to