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December 27, 1963

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Dear Dean:

First, let me tell you how much I enjoyed my visit and the course. Since then, I have gone over much of the Hillside data with a fresh view, and I am inclined now to write another report on the EEG data. The course was especially rewarding to me since we had data known to both of us to discuss.

1. Separately, I am sending you the tape with the full Hillside data. Attached is the problem number index and a sample write-out page. There are two listings on the tape - the first by patient; the second, by problem number. The sample sheets will indicate the format. Code for missing data is 9999.

Problems 11-14 are the specially created "drug-sensitive" scales created by the Hillside staff; 15 is not on these tapes as it was available in 50 patients only; 30-32 are individual EEG band data
(3, 3.5, 4.0, 4.5, 5.0, 5.5, 6.0, 6.5, 7.0, 8.0)
(9, 10, 11, 12, 13.5, 15, 16.5, 18, 20, 22.5)
(25, 27.5, 30, 33); 51-68 the original data.

2. I have examined the various write-outs of our studies using discriminant function, and find none comparing schizophrenics vs. other on pre-examination data. If we wish to add to the present question as to whether schizophrenics do have EEG patterns different from other mentally ill, we may approach the Hillside Hospital sample as a well collected sample. Pre-data for each of the five bands (Prob. 62, #1 - 5) and total sum (Prob. 62 #6); or the 24 individual bands (Prob 30-32) are the EEG data to be compared. Do you wish to do this analysis?

We do have the covariance data for the total group, the schizophrenics and the others, comparing the effects of placebo, thorazine and imipramine.

The effects, reflected in the two F-ratios and the t-tests (see data page copied, attached), are the same for each diagnostic group, with the possible exception of Prob. 62 #5 (061 on the sheet dated 1/9/62) in which schizophrenics show a marginal F-ratio (regression) which depressives do not.

3. I looked at the covariance data of Prob. 62 #1-5 to determine to what extent the pre-data contributed to the post-difference. (i.e., does pre-data contribute to precision of difference scores?). Comparing $\sum Y$ -square to $\sum D$ -square of common, shows that the use of pre-data increases precision markedly for each variable, for a factor of at least 2X and occasionally as much as 4X.

4. The canonical correlation model for EEG and psychological tests in the pre-position is intriguing and I am enclosing a set of references which show some similar relationships. The most careful studies are those of Mundy-Castle, Werre, Obrist, and the review by Ellingson.

Over-riding the pattern in the Hillside data is the factor of age, and any further studies must "parcel-out" this factor. If adolescents are included, they have higher amounts of slow wave activity and lower performance than adults. If aged are included (see Obrist) then there is poorer performance and higher slow wave activity. If both are in the sample (as with Hillside) then this may be a factor in the result.

5. The canonical model is intriguing and as soon as Vanderplas is back from his vacation, I will ask him to run a few trials at Washington University.

If you wish to follow-up the psychological - EEG relationship, another analysis on the post data, or the D-scores for the total group should be done. (Or, is it preferable to do each drug separately? I think not.)

6. I was most intrigued by your library approach. I have discussed my interest with Damkoehler again, and he responded by again suggesting that we start with Psychopharm. Abstracts and an SDI model. He had proposed this last year, and PSC & NIMH turned us down for "administrative" reasons. I have called Jon and asked if we could not revive this proposal.

In the meanwhile, I am running a few experiments with descriptions^{RS}; having references from various sources punched on cards; and studying the literature on "information retrieval" programming.

In checking the IBM 7000-series library programs, we found none to provide a dictionary. There is one for 7090 written in COMIT; a second in machine language. If your Fortran list and/or deck is available in annotated form, I would be grateful for a copy.

This letter is long enough. I will send it off, and will follow with another copy of our new write-outs and graphs for EEG analysis. My best wishes for a Happy New Year, and for many, many more to come.

Sincerely yours,

Max Fink, M. D.
Director

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