

F. Sellers

April 30, 1979

Marc D. Schwartz, M.D.
26 Trumbull St.
New Haven, Conn. 06511

Dear Dr. Schwartz,

Thank you for the copies of the past issues of Micro-Psych. Psychiatrists were among the first physicians to see the merit of digital computers and the present enthusiasm based on smaller and less expensive devices continues this drive. There are many excellent applications which are being developed and I expect such devices to be as secure in clinics and offices in the 1980's as typewriters are today.

Our initial interest in digital computers was to reduce the tedium and inaccuracy of hand counts of EEG and ECG wiggles, and in measuring the changes induced by drugs on behavior. My first digital computer EEG analyzer was established in 1964 at the Missouri Institute of Psychiatry (IBM 1710) with the support of the staff of the Computer Center of Washington University; second an IBM 1800 system developed in New York in 1967, by D. M. Shapiro, D.Sc. This system is operational at SUNY at Stony Brook and consists of an IBM 1800, 36K memory, 2 disks, printer, typewriter, card read and punch and assorted other gear. The system has steadily churned out EEG analyses using period analysis and power spectral density analysis for the initial data reduction, and a wide range of statistical and display packages for later presentations (t-test, ANOVA, ANCOVA, linear and quadratic regression, etc.). The system analyzes tapes from drug studies --- about 8/year from our laboratory and as many from outside laboratories that collect their data and ship the tapes to us for analysis.

We also developed an interactive diagnosis system based on a CDC interactive display terminal (CDC 217A with digiscribe) and an IBM 360/40. The programs were written in PL/I (DOS) and were based on two diagnostic logics --- that of DIAGNO-II developed by Spitzer and Endicott and the BPRS by Overall and Gorham. These exercises found such interactive diagnostic systems very useful in research studies but their expense

precluded a general utility. Those programs were published in 1971, and I have not gone back to that problem since, but the newer systems of psychiatric diagnosis, particularly the DSM-III and RDC use logics that allow computerization with little translation. I am optimistic that some of your readers will be able to accomplish these translations and programs for the smaller machines. Such facility will provide the necessary underpinning for a more systematic diagnosis system and much better data for the inevitable revisions of DSM-IV and -V which are sure to come.

Quantitative EEG analysis is established as a useful process in psychopharmacology --- to classify and identify new psychoactive drugs and to define their pharmacodynamic properties. Some references are cited below for the readers who may be interested. There is an opportunity for those who wish to collect EEG or ECG data on compatible tapes (IRIG 7-channel Ampex SP 300, 1/2 inch; or IRIG 4-channel Hewlett Packard 3760A or 3764, 1/4 inch) to have them processed in our laboratories at nominal expense.

Good Luck in your venture.

Sincerely yours,

Max Fink, M.D.
Professor of Psychiatry

References:

- Fink, M., Shapiro, D.M., Hickman, C. and Itil, T. Quantitative Analysis of the Electroencephalogram by Digital Computer Methods. III. Applications to Psychopharmacology. *Computers and Electronic Devices in Psychiatry*, (Ed.) N.S. Kline and E. Laska, Grune and Stratton, 109-123, 1968.
- Fink, M., Itil, T. and Shapiro, D. Digital Computer Analysis of the Human EEG in Psychiatric Research. *Comprehens. Psychiat.*, 8: 521-538, 1967.
- Fink, M. EEG Classification of Psychoactive Compounds in Man: Review and Theory of Behavioral Association. *Psychopharmacology - A Review of Progress, 1957-1967*, (Eds.): D. Efron, J. Cole, J. Levine and J. R. Wittenborn, U.S. Govt. Printing Office, Washington, D.C., pp. 497-507, 1968.
- Shapiro, D.M., Feldstein, S. and Fink, M. *Computer Aided Interactive Psychiatric Diagnosis Programs*. New York, Biodata, Inc. 75 pp., 1971.
- Fink, M. EEG Profiles of Fenfluramine, Amobarbital and Dextroamphetamine in Normal Volunteers. *Psychopharmacologia (Berl.)* 22: 369-383, 1971.
- Fink, M. EEG Profiles and Bioavailability Measures of Psychoactive Drugs. In: T. Itil (Ed.): *Psychotropic Drugs and the Human EEG. Modern Problems in Pharmacopsychiatry*, Basel, S. Karger, pp. 76-98, 1974.

References continued:

- Fink, M. Cerebral Electrometry: Quantitative EEG applied to Human Psychopharmacology. In: H. Klinkel and G. Dolce (Eds.): *Cean - Computerized EEG Analysis*. Stuttgart, G. Fischer, 271-288, 1975.
- Irwin, P. and Fink, M. An Empirical Comparison of Three EEG Digital Conversion Techniques. In: M. Matejcek and G.K. Schank (Eds.): *Quantitative Analysis of EEG*. Konstanz, Switzerland, AEG Telefunken, 379-394, 1976.
- Fink, M., Irwin, P., Gastpar, M. and de Ridder, H. EEG, Blood Level, and Behavioral Effects of the Antidepressant Mianserin (ORG GB 94). *Psychopharmacologia* 54: 249-254, 1977.
- Fink, M. Mania and Electroconvulsive Therapy (EST). In: Shopsin, B. (Ed.): *Manic Illness*. New York, Raven Press, 221-230, 1978.

MF:bc