

Professor Everitt argues convincingly that for psychiatry to advance systematically as a scientific discipline, psychiatric researchers will need to rely more and more on the "scientific approach" and on statistical techniques. His clear and stimulating presentation has performed a great service to the field of psychiatry by introducing a large audience of statisticians to the problems and challenges of statistics in psychiatry.

ADDITIONAL REFERENCES

CHEN, W. C., HILL, B. M., GREENHOUSE, J. B. and FAYOS, J. V. (1985). Bayesian analysis of survival curves for cancer patients following treatment. In *Bayesian Statistics II* (J. M. Bernardo,

M. H. DeGroot, D. V. Lindley and A. F. M. Smith, eds.) 299–328. North-Holland, Amsterdam.

FAREWELL, V. T. (1982). The use of mixture models for the analysis of survival data with long-term survivors. *Biometrics* **38** 1041–1046.

GREENHOUSE, J. B. and WOLFE, R. A. (1984). A competing risks derivation of a mixture model for the analysis of survival data. *Comm. Statist. A—Theory Methods* **13** 3133–3154.

KUPFER, D. J. (1984). Neurophysiological 'markers'—EEG sleep measures. *Psychiatric Res.* **18** 467–475.

KUPFER, D. J. and FOSTER, F. G. (1978). EEG sleep and depression. In *Sleep Disorders: Diagnosis and Treatment* (R. L. Williams and I. Karacon, eds.) 163–209. Wiley, New York.

MULLEN, P. E., LINSELL, C. R. and PARKER, D. (1986). Influence of sleep disruption and calorie restriction on biological markers for depression. *Lancet* 1051–1054.

Comment

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Everitt notes that psychiatry is a relatively young discipline as compared to other branches of medicine since its theories regarding the etiology and treatment of psychiatric disorders are in their infancy. He reports that psychiatrists have become increasingly aware that to build and to advance their theories requires well designed quantitative studies in combination with the use of appropriate statistical tools in order to properly evaluate the results of such studies.

While I concur with these assessments, I wish to provide additional material regarding the historical background and various efforts to develop a nosology (or classification) of mental disorders. This discussion will contain the major portion of my comments since the nosology of a science serves as the grist (i.e., the diagnosis of a case) which yields the data which psychiatrists wish to analyze. Although I will only provide a sketch of the developments which have led to the current nosology (DSM-III), I wish to note that considerable advances have been made in the fields of psychiatry and psychiatric epidemiology since 1800.

Psychiatry has indeed struggled to attain the "dignity of science" by submitting its observations to measurement and quantification. In fact, Grob (1985) has noted that after 1800, several currents converged to create a type of social inquiry whose methodological distinctiveness was a commitment to quantitative research. Underlying this urge to quantify was the assumption that such a methodology could explain social phenomena. He also reported that early and

mid-nineteenth century commentators were preoccupied with the development of elaborate classification systems and an almost obsessive concern with the collection of statistical data. That the field of epidemiology emerged in such an environment was not surprising.

Grob observed that American psychiatrists were among the staunchest proponents regarding the collection of statistical data. The annual reports of mental hospitals as well as the *American Journal of Insanity*, which was first published in 1844, included statistics on the demographic and geographical characteristics of mentally ill patients as well as the results of therapy. In addition, the federal census of 1840 provided some aggregate data on the mentally ill population.

Although nineteenth century psychiatrists were avid data collectors, their approach to statistical data consisted of the following interests:

1. They used statistics to demonstrate high "cure" rates.
2. They thought that the collection of data would help to uncover laws governing health and disease.
3. They used statistics for purposes of policy advocacy.
4. They viewed statistical data as a means to establish the legitimacy of public mental hospitals and to build support among state officials and the public.

Mid-nineteenth century psychiatrists thought there was a direct relationship between the rising incidence of mental illness and the advance of civilization. Such

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