COMPUTER PROGRAMMES FOR SIGNAL DETECTION THEORY

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SIPROG. SIGDET

This programme performs the "normal" analysis of signal detection data as described in Grey and Morgan (1972). The programme is written in Fortran IV and was obtained from the British Medical Research Council's Applied Psychology Unit. The programme provides a maximum-likelihood solution to the computation of the parameters of data collected by the ratings method of signal detection. The programme accepts matrices composed of the number of responses made to "noise" and "signal plus noise" events, in up to 10 ratings of confidence for report.

The output consists of:

(1) the distance from the mean of the "noise" to the mean of the "signal plus noise" distribution;
(2) the ratio of the standard deviation of the "noise" distribution to the standard deviation of "signal plus noise" distribution;
(3) the conventional measure d', scaled in units of the noise distribution;
(4) d'_{GM} as described by Grey and Morgan (1972);
(5) d'_a and d'_e as described by Simpson and Fitter (1973);
(6) the position of each criterion or cut-off point, C, in z-scores measured from the mean of the noise distribution;
(7) the likelihood ratios or β-values of each criterion;
(8) the Naperian logarithm values of each β-value for each criterion;
(9) the variance-covariance matrices;
(10) a Chi-square value for the goodness of fit of the model to the data.

The programme has been successfully used on the Burroughs 6700 in Otago and on the Cambridge University Computing Centre's IBM.

SDT SHORT

In addition, a short version of the signal detection analysis is available. It uses the ratings method of analysis of the data but with logistic underlying distributions. It is appropriate only for 3 ratings of confidence for report because it uses the short cut in computation that exists when only two cut-off points are used. It gives values for the two cut-off points, likelihood ratios, and measures of variance and sensitivity.

The method used in this programme is also described in detail by Grey and Morgan (1972) .

Please note that we cannot readily supply card decks of these programmes but we can supply listings and source files on magnetic tape.

REFERENCES

Grey, D. R., and Morgan, B. J. T. Some aspects of R.O.C. curve-fitting: normal and logistic models. *Journal of Mathematical Psychology,* 1972, 9, 128-139.

Simpson, A. J., and Fitter, H. J. What is the best index of detectability? *Psychological Bulletin,* 1973, 80, 481-488.