Generalized kappa coefficient: A Microsoft BASIC program

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The kappa coefficient is designed to measure nominal rating agreement among observers (or raters). The program presented here is based on Uebersax's (1982) formula, which is a generalized method for computing kappa that can be used for multiple observers (or raters) and multiple categories and that takes into account missing data as well. Previous programs for computer applications of kappa have not been designed to handle these features (Berk & Campbell, 1976; Bloor, 1983; Burns & Cavallaro, 1982; Watkins & Larimer, 1980; Wixon, 1979).

The program allows for up to 500 subjects (or intervals), 10 observers, and 15 categories. Values can be increased or decreased to accommodate computers with varying degrees of storage capacity.

Input. Initial inputs are the number of subjects (or observation intervals) and the number of observers (or raters). The program then requests the category number (or score) for each subject and each observer. The user has the option of correcting any entry and of requesting kappa for any combination of observers. The data are stored and can be reused in new runs of the program.

Output. The output consists of the observed propor-

tion of agreement (PO), the chance proportion of agreement (PE), and $\text{kappa} = (\text{PO} - \text{PE}) / (1 - \text{PE})$ across all raters. When requested by the user, the program provides the same information for any desired combination of observers. For two observers and no missing data, the program also automatically provides the approximate standard normal test z statistic, the standard error, and the 95% confidence interval of kappa.

Limitations. The total amount of memory required is determined by the number of subjects, observers, and categories. Without modification, the program requires 30K RAM.

Language and Computer. The program is written in Microsoft BASIC and can be used with the IBM PC and Apple II microcomputers.

Availability. A program listing is available at no charge from Johan Oud, Katholieke Universiteit, Instituut voor Orthopedagogiek, Erasmusplein 1, 6500 HD Nijmegen, The Netherlands.

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