INFORMATION POINT:

Wilks' lambda

Wilks' lambda is a test statistic used in multivariate analysis of variance (MANOVA) to test whether there are differences between the means of identified groups of subjects on a combination of dependent variables. For example, in the paper above, the authors test whether the mean score of two groups, graduates and diplomates, is the same across eight constructs simultaneously. Thus, they are considering eight dependent variables and comparing the mean of this combination for two groups.

Wilks' lambda performs, in the multivariate setting, with a combination of dependent variables, the same role as the F-test performs in one-way analysis of variance. Wilks' lambda is a direct measure of the proportion of variance in the combination of dependent variables that is unaccounted for by the independent variable (the grouping variable or factor). If a large proportion of the variance is accounted for by the independent variable then it suggests that there is an effect from the grouping variable and that the groups (in this case the graduates and diplomates) have different mean values.

Wilks' lambda statistic can be transformed (mathematically adjusted) to a statistic which has approximately an F distribution. This makes it easier to calculate the P-value. Often authors will present the F-value and degrees of freedom, as in the above paper, rather than giving the actual value of Wilks' lambda.

There are a number of alternative statistics that can be calculated to perform a similar task to that of Wilks' lambda, such as Pillai's trace criterion and Roy's gcr criterion; however, Wilks' lambda is the most widely used. Everitt & Dunn (1991) and Polit (1996) provide more detail about the use and interpretation of Wilks' lambda.

Further reading

Everitt B.S. & Dunn G. (1991) *Applied Multivariate Data Analysis*. Edward Arnold. London. pp. 219–220.

Polit D.F. (1996) *Data Analysis and Statistics for Nursing Research*. Appleton and Lange, Stamford, Connecticut. pp. 320–321.

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