**INFORMATION POINT:**

# *Mokken Scale Analysis*

Mokken scale analysis is a hierarchical scaling method and is similar to Guttman scaling. Both techniques assume the existence of an underlying latent (unobservable) attribute, which is represented by a set of items related to the latent attribute. In addition, the items must have a hierarchical property since the scaling method is hierarchical. The hierarchical property amongst the items means that they can be ordered by degree of difficulty, so that any individual who agrees with, or can achieve, a particular item will also agree with, or can achieve, all the items ranked lower in difficulty. An individual's score on the scale is simply the rank of the highest item in the hierarchy that they endorse, or is their total number of positive responses.

Examples of scales that use the idea of hierarchy are the Katz Index of Activities of Daily Living and the Arthritis Impact Measurement Scale. Both were derived using Guttman scaling and are described by Bowling (1997). Oppenheim (1992) gives an example of the process of carrying out Guttman scaling.

The main difference between Guttman scaling and Mokken scaling is that Mokken scaling has a probabilistic nature whilst Guttman scaling does not. In Mokken scale analysis reproducibility is measured by Loevinger's coefficient $H_i$ for each item $i$, and $H$ for the entire scale. The calculation of $H_i$ and $H$ depend on comparing the probability of errors in ranking to the probability of such a ranking occurring if the items are unrelated. $H_i$ and $H$ will take values between 0 and 1. A commonly used rule of thumb is that a strong scale is one in which all $H_i$ and $H$ exceed 0.5 in value. We would consider omitting from the scale items that have a low value of $H_i$.

**Further reading**

Bowling A. (1997) *Measuring Health*, 2nd edn. Open University Press, Buckingham.

Jong A.D. & Molenaar I.W. (1987) An application of Mokken's model for stochastic, cumulative scaling in psychiatric research. *Journal of Psychiatry Research* **21**, 137–149.

Oppenheim A.N. (1992) *Questionnaire design, interviewing and attitude measurement*. Pinter, London, pp. 201–205.

NICOLA CRICHTON