

Three-way modeling of individual differences in sequential personality-related processes

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Abstract

In this paper, we focus on the modeling of a specific type of three-way three-mode binary data that often occurs in personality psychology, the modes of which consist of (1) persons, (2) situations and (3) mediating cognitive-affective variables (CAV) as well as behaviors. Underlying such data, personality psychologists typically assume a two-step sequential process:

situation \rightarrow CAV \rightarrow behavior,

the two steps of which may be characterized in terms of if-then links. It is further hypothesized that these two types of if-then links may differ across persons. An important challenge for personality psychology then consists of retrieving the place and nature of the key individual differences in the process under study. To meet this challenge, we present a new three-way three-mode model that belongs to the family of Tucker-HICLAS models. The latter is a family of multiway classification models for binary data that constitute the Boolean counterparts of Tucker models for real-valued data. The new Tucker-HICLAS model includes two core arrays that represent the two types of if-then links, as mentioned above, as well as individual differences therein.

References

- Ceulemans, E., Van Mechelen, I., & Leenen, I. (in press). Tucker3 hierarchical classes analysis. *Psychometrika*.
- Ceulemans, E., & Van Mechelen, I. (in press). Uniqueness of N-way N-mode hierarchical classes models. *Journal of Mathematical Psychology*.