POS-A01

PD en Matemáticas

A PROPOSAL FOR SCORE DEVELOPMENT FROM A QUESTIONNAIRE WITH A RANKED ONE DIMENSIONAL STRUCTURE IN MCA

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Multiple correspondence analysis (MCA) is mainly used for the statistical analysis of qualitative variables. MCA can also be applied to the analysis of questionnaires. It is shown in the literature that applying MCA to questionnaires with Q items with ordinal scale answer options, not necessarily the same for all the items, usually derives in a ranked structure that appears in the first two dimensions as an arch shape called Guttman effect. We hypothesize that this effect can be used in order to define a more efficient score than just adding up the numerical answers to the items. The aim of this work is to propose a method for developing a summary score based on the answers from a questionnaire where a one dimensional structure is confirmed and all the variables modalities are sorted in the first dimension from the MCA. The first step in the proposed methodology is to apply the MCA to all the items of the questionnaire setting the active variables. We must keep the first dimension of the MCA and proof that all the modalities of each variable are ranked over the first axe. When this effect is present, we can apply the corresponding first dimension´s principal coordinates to each modality. Then, we can define the summary score by the sum of the chosen modalities coordinates of all the variables. Moreover, we take into account the maximum and minimum coordinate values from the MCA and by a linear transformation we define the global index from 0 to 100. An R package has been developed for the implementation of the method. Finally, we describe the application to real data, and we compare the results of the proposed score with an existing summary score for that questionnaire. Funding: Departamento de Educación, Política Lingüística y Cultura del Gobierno Vasco (IT620-13).