Contribution ID: 154

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Thursday 24 July 2025 17:10 (20 minutes)

Poster

Application of Exploratory Graph Analysis (EGA) to a scale of depressive symptomatology

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Abstract

Background: Depressive disorders are one of the two most common mental disorders worldwide and highly prevalent among older adults. Therefore, its early detection is of outmost interest for older adults'healthy aging. Among the instruments employed to measure depressive symptomatology in the adult population, the EURO-D scale stands out as a short instrument that harmonizes pre-existing scales: the Geriatric Mental State-Automated Geriatric Examination For Computer Assisted Taxonomy (GMS-AGECAT), SHORT-CARE, the Center for Epidemiologic Studies Depression Scale (CES-D), the Zung Self-Rating Depression Scale (ZSDS), and the Comprehensive Psychopathological Rating Scale (CPRS). The EURO-D scale has been widely used and has multiple validation studies. However, its factor structure is still under debate and Exploratory Graph Analysis (EGA), a novel technique derived from network psychometrics, constitutes a promising new alternative to analyze its dimensionality. For that reason, the aim of this study is to explore the dimensionality of EURO-D using EGA.

Methodology: The sample comprised 46317 adults from the 8th wave of the Survey of Health, Ageing and Retirement in Europe (SHARE). Participants were from 26 European countries and Israel, had an average age of 71.33 years (SD = 9.34) and 42.6% were male. The sample was randomly split into two subsamples: a derivation sample (n = 23,282) and a cross-validation sample (n = 23,035). A two-step strategy was followed. First, EGA was applied to the derivation sample to determine the underlying factor structure of the EURO-D. For this, two estimation methods were used: the Graphical Least Absolute Shrinkage and Selection Operator (glasso) and the Triangulated Maximally Filtered Graph (TMFG). Next, the resulting factor structure using each of the estimation methods was tested by means of Confirmatory Factor Analysis (CFA) in the cross-validation sample to assess model fit.

Results: The results of the EGA indicated a two-factor structure for the EURO-D, composed by "affective suffering" and "lack of motivation". Both glasso and TMFG estimation methods consistently identified this two-factor structure, with slight variations in the allocation of the suicidality and fatigue items. CFA results confirmed that both structures provided an adequate fit to the data. Results of the CFA based on the glasso EGA were: $\boxtimes 2(53) = 2472.71$, p< .001, CFI= .941, RMSEA= .045, 90%CI [.044, .047], SRMR= .061. Results of the CFA based on the TMFG EGA were: $\boxtimes 2(53) = 2356.17$, p< .001, CFI= .944, RMSEA= .044, 90%CI [.043, .046], SRMR= .061.

Conclusions: This work presents a combination of an exploratory technique, EGA, and a confirmatory technique, CFA, that has allowed providing additional evidence of the factor structure of a commonly used scale. The results support a two-factor structure on the EURO-D scale with alternative allocation of the fatigue and suicidality items. Present results are discussed against previous studies reporting two and three-factor solutions with different allocation of these items.

Keywords

EGA; validity; factor structure; EURO-D

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Session Classification: Poster Session 4

Track Classification: Measurement: Measurement