A network approach to investigating relationships between depressive symptoms and covariates.

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Intro

Mental health symptoms have traditionally been understood as indicators of underlying latent causes (e.g., brain disease). The introduction of a network theory of psychopathology has reconceptualized mental disorders as a complex network constituted of interconnected, causally related symptoms, which may reinforce each other thereby maintaining a disordered state. This theoretical shift has been accompanied by an emergence of network psychometric methods, enabling estimation and testing of network models from cross-sectional and longitudinal data. In psychometric network models, nodes typically represent observed variables and edges represent the pair-wise partial correlations between them. Various tools have been developed to investigate the psychometric properties of estimated networks.

Methods

This study used cross-sectional data from the Mental Health Million project. Participants took the Mental Health Quotient (MHQ), a novel 47-item questionnaire consolidating symptom items from 126 psychiatric tools assessing ten common mental disorders. We selected 18 items which mapped onto depression found in the DSM-IV, Beck Depression Inventory, and Patient Health Questionnaire-9, as well as 11 covariates hypothesized to be related to depressive symptoms from participants from English-speaking countries (n=56244). We estimated two networks with a graphical LASSO regularization procedure to suppress spurious associations. The first network included only the 18 continuous depressive symptom items to estimate direct relationships between symptoms, uncontrolled for covariates. The second network included the 11 covariates, and was estimated as a Mixed Graphical Model to account for the mixed binary, ordinal, and continuous data. Edges were compared between models to investigate whether controlling for covariates significantly changed the direct relationships between depressive symptoms.

Results

Quantify edge differences between networks

Discussion



