DEVELOPMENT OF A DIAGNOSTIC TOOL FOR A CHILDHOOD PSYCHOLOGICAL DISORDER USING MULTIVARIATE STATISTICAL ANALYSIS

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This research was conducted to determine the appropriate statistical approach for developing a diagnostic tool for Reactive Attachment Disorder (RAD), a psychological disorder found in young children who have experienced severe neglect or abuse. Multivariate statistical methods are widely applied to psychological data for classification purposes. Often, however, little consideration is given to the statistical theory and the 'most interpretable' results are quoted.

The data used to develop and test the methods came from a UK based population study of over 15000 twins, part of which involved parents completing a Relationship Problems Questionnaire (RPQ) which consisted of 18 items relating to RAD behavior. Factor analysis was initially applied to the RPQ responses to rene the questionnaire and identify questions relating to similar psychological characteristics. Cluster analysis was then used to identify possible cases and non-cases of RAD within the sample. The linkage method and distance measure were determined using simulated data from Poisson distributions, modeled on the questionnaire sub-scales derived from the factor analysis, with pre-defined classifications. Finally the generated clusters were validated using logistic regression analysis on external behavioral measures known to be indicative of the different subtypes of RAD.

An RPQ cut-of value of 33 was determined as a diagnostic indicator of RAD and identified 80 (0.6%) individuals in the sample as probable RAD cases.

The use of simulations based on the probability distribution of the data and validation of results using external parameters in this study provide a more objective approach for analyzing data of this type.