

Decision Tree-Based Adaptive Testing in Psychodiagnostic Screening of multiple mental health conditions

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Oral presentation

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Abstract

Traditional psychometric screening is often time-consuming and tedious, potentially compromising respondent engagement and data quality, especially among vulnerable populations. This study examines the suitability of machine learning-based computerized adaptive testing (ML-based CAT) for accurate and efficient screening of multiple mental health conditions. The study employed a cross-validation approach, based on real-data simulations, to train and test the performance of ML-based CAT in categorizing respondents as at-risk or not at-risk for pairs of disorders simultaneously assessed (i.e., depression and specific phobia; agoraphobia and social anxiety). The results indicate that ML-based CAT exhibited high diagnostic accuracy, while significantly reducing the number of items administered by more than 50%. The findings suggest that the approach based on the simultaneous classification of two disorders is more efficient than the approach based on the classification of the single disorders separately, with negligible loss of diagnostic accuracy. These results indicate that ML-based CAT has the potential to improve the efficiency and accuracy of mental health assessments by offering a versatile and effective alternative to traditional methods.

Keywords

Machine-Learning, Decision-Tree, Assessment, Screening, Mental-Health

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