Modeling the latent structure of cannabis use disorders: Evidence from an Australian population sample

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INTRODUCTION

• Cannabis Use Disorders (CUDs) are clinically heterogeneous\textsuperscript{1}.  
• This variation between cases may hamper efforts to identify risk factors, evaluate treatment and predict prognosis  
• Latent variable analyses can help to identify homogeneous groups of people  
• Past focus has been on identifying optimal numbers of latent factors or latent classes with conflicting results\textsuperscript{2, 3}.  
• Newer techniques (factor mixture modeling\textsuperscript{4}) examine the fit of meaningful combinations of factors and classes

METHODS

• Factor mixture modeling was carried out on self-reported symptoms of CUDs  
• Data came from the 2007 National Survey of Mental Health and Wellbeing, a large epidemiological survey of psychiatric disorders in the adult population\textsuperscript{5} (n=8841, aged 16-85)  
• Symptoms were collected with the World Mental Health version of the Composite International Diagnostic Interview  
• A sub-sample of lifetime cannabis users were analyzed (n=1639)  
• 10 different models were fit (see below)

RESULTS

• While the two factor (abuse dependence) FA model fit best the correlation between factors was extremely high (0.921)  
• The three class LCA fit best with classes defined largely by different rates (but not patterns) of symptom endorsement  
• There was inconsistency in the evidence for the best fitting FMM model  
• Some fit indices pointed to the FMM model with three classes and a single (severity) factor within each class  
• Others pointed to the model with one zero class and a single (severity) factor

DISCUSSION

• When comparing all models together a simple unidimensional model was the best fit to the data  
• Mixture models did not provide a superior conceptualization  
• However, mixture models mean researchers are no longer forced to choose between purely dimensional and purely categorical models

2. Blanco et al. (2007). Drug and Alcohol Dependence  

\textsuperscript{a} The spectrum of latent structure as conceptualized by Masyn et al. (2010)\textsuperscript{6}.  

Factor Analysis – how many continuous latent dimensions best explain the observed symptoms of CUDs?  
Factor Mixture Modeling – what combination of dimensions and classes best explain the observed symptoms of CUDs?  
Latent Class Analysis – how many categorical latent classes best explain the observed symptoms of CUDs?

Continuous latent CUD factor(s)  
Continuous latent CUD factor(s)  
Categorical latent CUD classes

Model 1: One factor (simple unidimensional structure)  
Model 2: Two factors (related to abuse and dependence)  
Model 3: One factor, One class + zero class (no symptoms)  
Model 4: One factor, Two homogeneous classes  
Model 5: One factor, Two class + zero class (no symptoms)  
Model 6: One factor, Three homogeneous classes  
Model 7: Two homogeneous classes  
Model 8: Three homogeneous classes  
Model 9: Four homogeneous classes  
Model 10: Five homogeneous classes