

## Commentary on Guertler *et al.*: Can latent class analysis methods develop our understanding of mental health and alcohol problem co-occurrence at a symptom level?

*Latent class analysis methods provide an opportunity to progress research investigating the co-occurrence of alcohol and mental health problems. These approaches allow us not only to understand how alcohol use patterns differ in individuals with and without a mental disorder, but to also define phenotypes based upon both mental health and alcohol use symptoms.*

Guertler *et al.* [1] have taken a unique approach in developing our understanding of the association between mental health and alcohol use. Their study analysed data from more than 10 000 patients receiving care from ambulatory practices and general hospitals in Germany to understand how latent classes of alcohol use (defined by frequency and quantity of alcohol use and binge drinking frequency) were related to depression. As expected, those with severe depression scores were more likely to be in a class defined by frequent alcohol use and frequent binge drinking [1]. This, in itself, is not a new finding given that existing meta-analyses have evidenced a strong association between common mental disorders (such as depression or anxiety) and alcohol use disorders (AUD) [2]. However, this study moved beyond purely establishing the co-occurrence of specific disorders, by determining whether specific symptoms of depression were more likely to be endorsed in individuals with particular drinking profiles [1].

Methodological approaches which focus on the disorder level may over-simplify what we understand about how people use alcohol to cope with their mental health [3] by presuming that all individuals with the same mental health problem will have homogeneous drinking patterns. This new work has identified how specific symptoms of depression are more common in those with particular drinking patterns. For example, the association of the frequent use and frequent bingeing latent class with poor appetite or over-eating [1] suggests that using alcohol to cope may not occur in isolation from other health behaviours, such as eating to cope [4]. This promotes a more holistic approach to understanding how a range of coping strategies may be used in individuals with a mental health problem. The findings may also promote cognitive behavioural therapy (CBT) treatment strategies, which focus upon challenging broader coping strategies [5], rather than on specific behaviours or substances. CBT has been shown to be more effective in treating AUDs in individuals with a co-occurring anxiety disorder if they also report drinking to cope [6]. Guertler *et al.* [1] identified that

individuals in the frequent use and frequent bingeing class were more likely to report 'feelings of worthlessness or guilt'. While this association may be explained through the depressive effects of alcohol, it seems plausible that individuals with lower self-esteem may be more likely to use alcohol to cope [7], despite knowing that it may not be the best thing for them.

Guertler *et al.*'s study was restricted to individuals who drank alcohol, but it also has important implications for future work, including non-drinkers. Individuals with a mental health problem are more likely to abstain from alcohol [8], so it would be informative to understand the mental health symptom profiles of those who have chosen to abstain [9]. Another drinking pattern that may be more common in those with a mental health problem is infrequent use, but with rare drinking episodes defined by bingeing or problematic use. Females with increased depression scores in the Guertler *et al.* study [1] were more likely to be in the class of occasional use and occasional bingers, suggesting that they used alcohol to cope in particular circumstances, but not on a frequent basis. Depression symptoms such as anhedonia, insomnia or hypersomnia and fatigue or loss of energy were also more common in individuals in the class defined by occasional use and occasional bingeing. It is therefore important to focus not only upon how commonly alcohol may be used by those experiencing mental health problems, but also upon motives for drinking [10], given that the negative implications of occasional binges could still be serious.

The association between mental health and alcohol use is likely to depend upon the measurement of alcohol use, with stronger associations between depression and quantity per occasion and heavy episodic drinking, compared to overall alcohol consumption [11]. Latent class analysis is useful in this regard, as it allows for the identification of unique groups which may not be identified through typical statistical methods. Guertler *et al.* used latent class analysis to define classes based upon frequency and quantity of alcohol use and binge drinking. Similar approaches have been used in the alcohol field; for example, in grouping individuals based upon the context of where and with whom they drink [12]. Latent class methods can also be used to explain the longitudinal associations between mental health and trajectories of alcohol use [13], which may be more informative than relying upon a single time-point. The work by Guertler *et al.* [1] was cross-sectional, so could not make inferences concerning the direction of the

relationship between mental health and alcohol use, but there is strong evidence that a decline in mental health drives increases in alcohol use [14]. Latent class and trajectory analyses [15] provide us with unique opportunities to understand more about the progression into problematic alcohol use of those with a mental health problem, how this may depend on their specific symptom profile and the trajectories of cutting down for those with a mental health problem who are now abstainers. Adopting these techniques will accelerate progress in the field of alcohol and mental health research.

#### Declaration of interests

None.

#### Author contributions

**Laura Goodwin:** Conceptualization; writing-original draft

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