

Dynamic Networks to explore predictors of substance use among patients beginning treatment for Substance Use Disorder

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Background. Ecological Momentary Assessment (EMA) studies previously demonstrated a prospective association between increase in craving intensity and higher probability of substance use in the following hours, highlighting the major role of craving in relapse. Conceptualizing Substance Use Disorders (SUD) as dynamic systems of causal elements could provide valuable insights on the interaction of craving with other symptoms in the process of relapse.

Objective: The objective is to explore the dynamic interrelationships between intensity of craving, substance use and associated factors in daily life, by estimating dynamic network models on EMA data collected among participants beginning addiction outpatient treatment.

Methods. A two-week EMA protocol assessed substance use and its potential precipitants four times per day among SUD patients beginning treatment for alcohol, tobacco, cannabis, stimulants and opiate addiction. Multilevel vector auto-regression models were used to explore contemporaneous, temporal and between-subjects networks considering primary substance use,

craving, cues, sadness, self-efficacy, and pharmacological treatment use. Especially, temporal model depicts the lagged associations of symptoms from one point of time (T0) to the next (T+1) within patients.

Results. Among the 211 patients, a strong positive association was found in the three models between craving and use. In the temporal model, primary substance use at one time (T) was predicted by higher craving and low self-efficacy at T-1, but not by sadness. Craving presented a negative feedback loop with self-efficacy. Use of a pharmacological treatment at one time was predicted by higher self-efficacy at T-1, and associated with less craving and less substance use at T+1.

Conclusion. Dynamic network analyses replicate previous results suggesting the importance of craving in relapse process, and offer a better understanding of importance of other variables. Results confirm clinical interest of craving and self-efficacy to target interventions.