Ecological momentary assessment: New insights and opportunities

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With ecological momentary assessment (EMA) methods, research participants complete self-report and cognitive assessments on mobile devices as they go about their daily lives. EMA represents a valuable opportunity to investigate behavior in the contexts in which it normally occurs, and it has become increasingly popular in recent years. In the addiction field, EMA studies have made important contributions to issues such as the prospective relationship between subjective craving and substance use ([1](#_ENREF_1)), drug interactions ([2](#_ENREF_2)), and the relationship between negative affect and alcohol consumption ([3](#_ENREF_3)).

Fatseas and colleagues’ paper ([4](#_ENREF_4)) makes an important contribution to the literature on cue reactivity, craving and drug use. Previous investigations of drug cue reactivity tended to use standardized cues and therefore neglected cues that were specific to the individual such as being in a certain place or in the company of a specific person. Person-specific cues such as these cannot be studied in clinical and laboratory settings, and arguably EMA is the only viable method to investigate their influence. Study findings indicated that the number of general substance-related and person-specific cues that had been encountered in the previous hours was associated with concurrently assessed craving intensity. Regarding relationships over time, person-specific cues were predictive of subsequent craving but general substance-related cues were not. Other analyses revealed that craving intensity predicted substance use four hours later, confirming findings reported in a recent meta-analysis from the same group ([1](#_ENREF_1)). Finally, a mediation analysis demonstrated that the relationship between exposure to drug cues and drug use four hours later was fully mediated by craving intensity.

EMA research is not without its limitations, many of which were noted by the authors. Perhaps the most important limitation of this particular study is that participants were asked to recall their exposure to drug cues over the previous few hours immediately after they had rated their craving intensity over the corresponding period. It is possible that recall of an experience of strong craving may have prompted a (perhaps involuntary) search for the cause of that craving, and therefore more drug-related cues may have been remembered. Given that assessments occurred at predictable intervals, the converse could also be true (‘I encountered a lot of drug cues so I am probably craving now’). These explanations could be tested in future research by decoupling the assessment of craving and exposure to drug cues so that each assessment probes only one, and including assessments at random rather than fixed intervals.

The study suggests opportunities to exploit this methodology to address other research questions. For example, the authors speculated that attentional bias to drug cues might have contributed to increased craving in response to those cues. Indeed, other EMA studies demonstrated that attentional bias can be measured on mobile devices, that increases in bias preceded increases in craving ([5](#_ENREF_5)), and that attentional bias may predict relapse independently of craving ([6](#_ENREF_6)). This may eventually lead to novel clinical interventions: trials of attentional bias modification (ABM) administered in clinical settings have generally yielded negative or ambiguous findings, perhaps because effects do not generalize outside of the clinic ([7](#_ENREF_7)). A recent trial demonstrated that ABM administered on mobile devices could prompt reductions in cigarette craving in tobacco smokers ([8](#_ENREF_8)), and a priority for future research should be to investigate if this intervention can reduce the risk of relapse in drug users who are attempting to remain abstinent.

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