Comparing retrospective and real-time measures of mood and associating substance use with one’s affect

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Introduction

Depressive symptomatology and negative affect are linked to relapse and heroin-induced transient symptoms similar to major depression (Hassin & Grant, 2002; Conner, Sörensen, & Leonard, 2005). In examining mood, two different types of procedures can be done: retrospective testing and real-time assessment. Due to its ability to circumvent recall bias, real-time assessment could be a more accurate measurement of negative mood compared to retrospective testing (Preston et al, 2009).

There were two goals for the study. Specific Aim One examined the relationship between depressive symptomatology assessed using a retrospective scale and negative affect assessed in real-time, while Specific Aim Two examined the capacity of real-time negative affect assessment and retrospective depressive symptomatology evaluation to predict opiate use.

Materials and Methods

Opioid-dependent persons between the ages of 18 and 75 were recruited to be in the study. Any participants that have psychological disorders including current Major Depression were excluded. Participants were then enrolled in methadone and buprenorphine treatment for 46 weeks.

There was a total of 48 participants. From this, there were 26 black persons and 22 non-black persons. There were only 34 males and 14 females.

A ten question variant of the Center for Epidemiologic Depression Score (CES-D) was given monthly to participants to act as a retrospective test measure. The CES-D asked how often a person experiences a mood or event related to symptoms of depression over the course of a past week (Radloff, 1977).

The participants were also given smartphones to assess affect using Ecological Momentary Assessment (EMA) as a real-time test measure. The participants’ smartphones randomly run three times a day prompting participants to answer questions about mood on a five-point Likert scale. For each random prompt, scores for affect items such as happy, sad, angry and hopeful were summed to create positive and negative mood scores.

To test for drug use, urinary drug tests were required three times a week in order to see if a participant had or had not used an opiate.

Specific Aim 1 was analyzed with Pearson Correlations to see if there is a significant association between real-time and retrospective assessment.

Specific Aim 2 was done using logistic regression with the Opiate Positive Urine as the dependent variable and positive mood and negative mood as the independent variables.

Results: Specific Aim 1

Positive mood and negative mood were correlated to CES-D (Graph 1 A and 1B), but not correlated to each other (Graph C).

Positive Mood and Negative Mood were found to be independent of one another, thus providing support to the idea that an individual has the capacity to experience both feelings of happiness and grief at the same time.

Results: Specific Aim 2

According to the Nagelkerke R^2 test, the CES-D only accounted for 1.20% of the variance of the sample's opiate positive urines and had a non-significant p-value of 0.365. In contrast, real-time assessment of positive mood and negative mood accounted for approximately 21% of the model's variability with real-time assessed negative mood having a negative relationship with opiate use (β = -0.23, p ≤ 0.05), and real-time assessed positive mood also having a negative relationship with opiate use (β = -0.17, p ≤ 0.05).

Conclusion

For Specific Aim 1, it should be expected that positive mood and negative mood were associated to the CES-D, but not associated to each other. Positive and negative affect can both be separate predictors of self-reported happiness despite their independence of another. These two dimensions of affect relate differently depending on external variables (Diener & Emmons, 1984).

For Specific Aim 2, CES-D test scores were shown to have little association to one's substance use, but real-time affect scores were shown to be good indicators for one's likelihood in using opiates. It was unexpectedly found that high scores of positive mood and/or negative mood had a significant negative association to one’s drug use. It was instead the lack of emotional response, or flat affect, that had a significant positive association to a person's likelihood of drug use (Graph 2).

The long-term goal of this research is the creation of real-time intervention. For creating a real-time intervention app, retrospective assessment was considered due to its user simplicity, but retrospective assessment was not associated to opiate use. Due to its positive association with opiate use and its ability to circumvent hindsight bias, real-time assessment may be used on mobile devices, so daily alerts may be sent to medical personnel. If a patient is found at risk for use, the device will signal medical personnel to intervene and prevent patients from not succumbing to their addictions and temptation.

References


