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Emotion Regulation and Motives for Illicit Drug Use in Opioid-Dependent Patients

Alexandra K. Gold, MA¹, Georgia Stathopoulou, PhD², Michael W. Otto, PhD¹

¹Department of Psychological and Brain Sciences, Boston University, Boston, MA

²Addiction Medicine, Massachusetts General Hospital and Harvard Medical School

Abstract

Refining the mechanisms behind illicit drug use is an important factor for improving the quality of clinical care. Research in alcohol, marijuana, and nicotine use disorders have linked coping motives (e.g., using substances to ameliorate negative emotional states) to problematic substance use. We evaluated the link between emotion regulation difficulties (as assessed via the Difficulties in Emotion Regulation Scale [DERS]) and motives for drug use (as assessed via the Drug Use Motives Questionnaire) among individuals ($n = 68$) with opioid use disorders who were in methadone maintenance treatment. We found that the DERS total score was significantly associated with coping motives for use. *Nonacceptance of emotional responses* was the only DERS domain that offered non-redundant prediction of coping motives. These findings highlight the relevance of specific emotion regulation deficits in motives for illicit drug use among individuals with opioid use disorders and may help inform targeted cognitive-behavioral treatments in this population.

Keywords

opioid dependence; coping motives; emotion regulation; Difficulties in Emotion Regulation Scale

Introduction

Elucidating mechanisms of illicit drug use may yield important insights that can be applied towards enhancing the precision of psychosocial treatments for substance use disorders. One such mechanism involves exploring the motives for substance use and the ways in which these motives can be linked to severity of use. Cooper and colleagues (1992) originally articulated the relationship among three different motives – coping motives, enhancement motives, and social motives – and problematic alcohol use (Cooper, Russell, Skinner, & Windle, 1992). *Coping motives* describe the use of substances to self-medicate (alleviate) negative emotional states, *enhancement motives* characterize substance use aimed at enhancing positive affect (e.g., positive arousal states), and *social motives* describe substance use that occurs in social contexts and facilitates social interactions. Analysis of coping motives has been found valuable for identifying alcohol use patterns and problems

that reflect attempts at emotion regulation (e.g., decreasing negative affect and increasing positive affect)(Aurora & Klanecky, 2016; Dvorak, Kuvaas, Lamis, Pearson, & Stevenson, 2015; Simons, Hahn, Simons, & Murase, 2017). Likewise, analysis of other drugs, including marijuana use patterns, have shown that poor emotional control was directly linked to coping motives for marijuana use (Bonn-Miller, Vujanovic, Boden, & Gross, 2011).

As compared to studies of alcohol and marijuana use, there is a relative deficit of investigations of correlates of coping motives in opioid use patterns. Prior studies have broadly linked emotion regulation deficits to opioid use disorders (Garland, Bryan, Nakamura, Froeliger, & Howard, 2017; Mohajerin, Dolatshahi, Pour Shahbaz, & Farhoudian, 2013); however, these studies did not use highly specific assessments of emotion regulation. One of the studies assessed emotion regulation deficits via the self-report Emotion Regulation Questionnaire (Gross & John, 2003; Mohajerin et al., 2013) that only assesses emotion suppression and reappraisal, and the other study used an emotion regulation paradigm which involved presenting participants with positive and negative-valenced stimuli along with instructions on how they should observe the image; among their results, the authors found that patients abusing opioids had significantly less heart rate variability during the emotion regulation task relative to those not abusing opioids (Garland et al., 2017).

The Difficulties in Emotion Regulation Scale [DERS](Gratz & Roemer, 2004) is a validated self-report questionnaire that provides an assessment of challenges with emotion regulation in adults (see Methods). Collectively, studies that have examined the DERS in a substance-using sample have found all 6 dimensions of the scale to be associated with problematic substance use and its consequences; however, in four studies of individuals with problematic alcohol and drug use, only impulse control consistently appeared as an emotion regulation difficulty (Dvorak et al., 2014; Fox, Axelrod, Paliwal, Sleeper, & Sinha, 2007; Fox, Hong, & Sinha, 2008; Simons et al., 2017). Of note, two of these studies were focused on alcohol-related problems in college students (Dvorak et al., 2014; Fox et al., 2007) and the other two were focused on treatment-seeking alcohol and cocaine users relative to social drinkers and community controls (Fox et al., 2008; Simons et al., 2017).

To our knowledge, no prior studies have explored the relationship between emotion regulation difficulties and illicit drug use motives among individuals with opioid dependence or highlighted the relevance of a specific dimension of emotion regulation deficits in problematic substance use in this population. We examined: 1) whether emotion regulation difficulties (as assessed via the DERS) were associated with coping motives, enhancement motives, and social motives for illicit drug use, and 2) which dimensions of emotion regulation difficulties offered the best prediction of illicit drug use motives. We hypothesized that emotion regulation difficulties would be associated with coping motives (as opposed to enhancement or social motives). We also hypothesized that all dimensions of emotion regulation would offer independent prediction of drug use motives given their collective association with alcohol and drug abuse across multiple studies.

Methods

Participants

Participants ($n = 68$, 35 females) were adults aged 18–69 receiving four or more months of methadone maintenance treatment for DSM-IV opioid use disorders, with diagnoses confirmed via the Structured Clinical Interview for DSM-IV (First, Benjamin, Gibbon, Spitzer, & Williams, 1997). Study exclusion criteria included lack of English language proficiency and a failure to understand study procedures (corresponding to an inability to provide informed consent), current mania, current psychotic symptoms, and current suicidal or homicidal ideation.

Measures

Drug Use Motives Questionnaire (DUMQ)—The DUMQ is a self-report assessment of motives (e.g., coping motives, enhancement motives, social motives) for substance use. This assessment is a modified version of the Drinking Motives Questionnaire (Cooper et al., 1992) and replaces the term “alcohol use” with “drug use” in line with prior studies that have adapted the questionnaire to assess use of substances other than alcohol (Comeau, Stewart, & Loba, 2001).

Difficulties in Emotion Regulation Scale (DERS)—The DERS is a self-report assessment of challenges with emotion regulation in the domains of *Nonacceptance of emotional responses* (e.g., “When I’m upset, I feel guilty for feeling that way”), *Difficulties engaging in goal-directed behaviors* (e.g., “When I’m upset, I have difficulty concentrating”), *Impulse control difficulties* (e.g., “When I’m upset, I lose control over my behaviors”), *Lack of emotional awareness* (e.g., “I am attentive to my feelings”), *Limited access to emotion regulation strategies* (e.g., “When I’m upset, I believe that I’ll end up feeling very depressed”), and *Lack of emotional clarity* (e.g., “I have difficulty making sense out of my feelings”). It has been demonstrated to have similar psychometric properties across diverse racial groups (e.g., African American, Asian American, and Caucasian groups) and among both males and females (Ritschel, Tone, Schoemann, & Lim, 2015).

Procedures

Participants were recruited from a methadone clinic in the Boston area. Participants who met study criteria were administered the DUMQ and the DERS. A full description of additional procedures that occurred as a part of this larger study are described elsewhere (Stathopoulou, Pollack, & Otto, 2018).

Data Analyses

First, we evaluated Pearson correlation coefficients between each of the three drug use motives (as assessed by the DUMQ) and the DERS total score. We then evaluated Pearson correlation coefficients between the relevant illicit drug use motives(s) (e.g., the motives that were significantly correlated with the DERS total score per the previous step) and the individual DERS subscales. Lastly, we evaluated which subscale of the DERS offered the best, non-redundant prediction of the relevant illicit drug use motive(s) using a stepwise multiple regression model. Race (White, African-American/Black, and Other/Not Reported)

and gender (male versus female) were included as covariates in these models. Some data suggest that race can influence motives for substance use; for instance, one study in adolescents found that coping motives predicted substance abuse in black individuals whereas social motives predicted substance abuse in white individuals (Bradizza, Reifman, & Barnes, 1999).

Thus, we included race as a covariate to account for any potential influence of this variable on motives for substance use in our sample. In addition, the one study showing a link between emotion regulation impairments and motives for substance use was conducted in a male-only sample (Bonn-Miller et al., 2011). As such, we included gender as a covariate in the present study to account for any possible contributing role that male sex could have on the relationship between emotion regulation deficits and substance use motives.

Results

Participant Characteristics

We analyzed data from all participants who had complete, relevant data ($n = 68$, 35 females). Participants had a mean age of 42.8 years ($SD = 9.76$). This study involved a racially diverse sample comprised of 54.4% ($n = 37$) Caucasian/White, 39.7% ($n = 27$) Black/African-American, and 5.9% ($n = 4$) Other/Not Reported.

Is the DERS correlated with motives for illicit drug use?

Among the three illicit drug use motives (coping motives, enhancement motives, and social motives), DERS total score was significantly associated only with coping motives ($r = .37$; $p < .01$). Domain-level evaluation of the DERS revealed that three domains offered significant bivariate prediction of coping motives: *Nonacceptance of emotional responses* ($r = .42$; $p < .01$), *Impulse control difficulties* ($r = .34$; $p < .01$), and *Limited access to emotion regulation strategies* ($r = .28$; $p < .05$).

Which subscale of the DERS offers the best prediction of coping motives for illicit drug use?

The stepwise regression model revealed that only the *Nonacceptance of emotional responses* subscale offered non-redundant prediction of coping motives for illicit drug use ($b = .052$, $t = 3.70$, $p = .000$). These findings were maintained after controlling for race and gender.

Discussion

Our analyses revealed that, in a sample of opioid-dependent individuals in methadone maintenance treatment, emotion regulation difficulties (as assessed via the DERS) were significantly associated with coping motives. Among the varied dimensions of emotion regulation difficulties, only one – *Nonacceptance of emotional responses* (e.g., negative reactions to one's own negative emotions or nonacceptance of emotional distress) – was uniquely predictive of coping motives for drug use. Overall, these findings clarify mechanisms underlying problematic drug use; one potential direction of this relationship is that impaired emotion regulation might encourage coping motives for using drugs. Perhaps

most notably, these data highlight emotional nonacceptance as a potentially important pathway for problematic drug use in this sample.

In substance-abusing individuals, emotional nonacceptance has been associated with experiential avoidance, or efforts to escape from undesirable internal emotional states (Gratz, Bornova, Delany-Brumsey, Nick, & Lejuez, 2007; Hayes, Wilson, Gifford, Follette, & Strosahl, 1996), and may be particularly problematic in those substance users whose negative affective states are amplified. Research suggests that these relationships may be different depending on the specific type of affective experience; for example, McHugh and Otto (2012) showed that in an opioid-dependent sample, intolerance of frustration may be particularly important for understanding drug use patterns (McHugh & Otto, 2012a). Likewise, there are indications that coping motives in opioid-dependent patients may have low prediction of craving in response to sad affect inductions alone (Stathopoulou et al., 2018). As specific relationships are further clarified, interventions designed to enhance emotional acceptance and tolerance may provide a useful adjunct to treatment for this population (cf., (Otto, Powers, & Fischmann, 2005; Tull, Schulzinger, Schmidt, Zvolensky, & Lejuez, 2007).

This study has some important limitations. Research indicates that assessments of emotional tolerance--a linked concept to emotional regulation difficulties and non-acceptance of emotional responses (see (Otto et al., 2005)) -- tend to show limited associations between self-report measures as well as between self-report and behavioral measures that may affect findings within those with opioid use disorder (McHugh & Otto, 2012b; McHugh et al., 2016). Furthermore, some inconsistency has been observed with the DERS in terms of its sub-factors (Lee, Witte, Bardeen, Davis, & Weathers, 2016), leading to the suggestion by some authors that the DERS total score be calculated without the *Lack of emotion awareness* sub-factor (Kokonyei, Urban, Reinhardt, Jozan, & Demetrovics, 2014). Also, our sample was limited to 68 individuals. We cannot be certain that the sample of 68 individuals is highly representative of the broader demographic of opioid users, particularly as the average age of our sample was over 40 and some data suggest that opioid use disorders are particularly prevalent among a different demographic of individuals in their twenties or younger (Compton, Jones, & Baldwin, 2016; Degenhardt et al., 2014). In addition, because of the small sample size, we were not able to conduct several statistical analyses that could have informed our findings. Such analyses include usefully examining interactions in our regression models and adjusting for other drug use motives when predicting coping motives. Despite these limitations, this study of opioid-dependent adults is consistent with prior literature showing an association between impaired emotion regulation and coping motives, and helps further extend these concepts from other substance use domains (e.g., alcohol, marijuana) to opioid use disorder.

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