Are Pain and Negative Affect Coping Distinct Motives for Opioid Misuse?

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Abstract

Coping with pain is a commonly reported motive for opioid misuse. Opioids also provide relief of stress and negative affect and thus are often misused to cope with these emotional states. Although several studies have investigated coping motives in people who misuse opioids, it remains unclear whether pain coping and negative affect coping are distinct or overlapping motives for misuse. In this study, we examined opioid use motives (enhancement, social, negative affect coping, and pain coping) in a sample of 52 adults seeking treatment for opioid use disorder. We used an adaptation of the Drug Use Motives Questionnaire that included an additional 5 items to assess pain coping motives for use. Results indicated that pain coping was not significantly associated with other motives for use, including negative affect coping. Pain coping motives were strongly correlated with both pain severity ($r = .51$) and pain interference ($r = .39$), but not anxiety severity. Conversely, negative affect coping motives were strongly correlated with anxiety severity ($r = .45$), but not pain severity or interference. These results suggest that pain coping motives may be distinct from negative affect coping motives and should be assessed separately.

Keywords

opioid use disorder; pain; motives; coping; negative affect

Introduction

Pain is highly prevalent among treatment-seeking adults with opioid use disorder (OUD), with approximately 40-60% reporting chronic pain, and even higher rates of acute pain (Potter et al., 2008). In people with OUD, pain is associated with increased risk for opioid misuse and relapse (Griffin et al., 2016; Larson et al., 2007; Potter et al., 2008). Furthermore, the anxious interpretation of pain (i.e., the interpretation that pain is intolerable or interminable) is associated with more severe drug craving in people with OUD (Kneeland et al., 2019). Accordingly, the desire to relieve pain may be a precipitating factor for opioid misuse in people with OUD.

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Understanding motives for opioid misuse in people with OUD can help to inform interventions targeting these factors. Motives for substance use are defined as the self-reported reasons for engaging in substance use. Common categories of motives include social (to adhere to social norms or to facilitate social engagement), enhancement (to feel "high," euphoric or other pleasurable effects), and coping (to achieve relief from unwanted distress). Several studies of national survey data have found that coping with pain is the most frequently endorsed motive for opioid analgesic misuse (i.e., use without a prescription or in a way other than prescribed) in the general population (Han et al., 2018; Schepis et al., 2020; Votaw et al., 2019). Less is known about pain coping motives in people with OUD. In a large clinical trial of treatment for people with opioid analgesic-related OUD, the majority of participants, including over 80% of people with chronic pain, reported that they *initially* misused opioids to relieve pain (Weiss et al., 2014). At the time of initiating OUD treatment, however, the most common motive for opioid use among participants with current chronic pain was to mitigate drug withdrawal (57%), followed by coping with pain (23%). Accordingly, the relative importance of pain coping motives may vary across levels of opioid misuse severity, with greater predominance of pain coping at lower levels of misuse or early stages of OUD, and more mixed motives as severity and/or duration of opioid use increases.

Opioids not only relieve pain, but also can reduce other forms of distress (e.g., negative affect, anxiety). Despite the apparent prominence of pain coping as a motive for opioid misuse, scales that measure reasons for substance use typically group "coping motives" into a single category assessing the likelihood of use to relieve or manage distress. The use of a single measurement of "coping motives" may miss variability within and across individuals in the likelihood of using opioids to cope with these distinct states (pain as opposed to negative affect). Indeed, a study of opioid use motives in undergraduate students found that pain coping was distinct from other motives for use (Jones et al., 2014). However, the Jones et al. study assessed opioid use (including use as prescribed) in a general sample of undergraduates. Thus, it is unknown whether pain coping motives are associated with negative affect coping motives for opioid misuse in a clinical population of people with OUD, or whether they are distinct and thus should be assessed separately.

The aim of this study was to examine the distinction between pain coping motives and negative affect coping motives in treatment-seeking people with OUD. The first aim was to quantify the magnitude of the association between pain coping motives and negative affect coping motives, to determine whether these reflect similar or distinct constructs. The second aim was to examine whether pain and negative affect coping motives are associated with pain and negative affect symptom severity in the expected direction. Specifically, we hypothesized that 1) pain coping motives would be significantly correlated with pain severity and pain interference, and that 2) negative affect coping motives would be associated with anxiety symptom severity.

Material and Methods

This cross-sectional study is a secondary analysis of a study of opioid cue reactivity in adults with OUD (McHugh et al., 2014). All self-report measures used in the current analysis were

completed prior to the cue reactivity session and only the methods pertinent to the current study are reported below. Participants were compensated with a $15 gift card for their time.

Participants

Adults were recruited from the inpatient and residential substance use disorder treatment units at a psychiatric hospital in the Northeastern United States. Inclusion criteria included: age _18 years old, a current primary diagnosis of OUD, and the ability to read and provide informed consent. Exclusion criteria included the presence of a psychiatric, cognitive, or visual impairment that would preclude completion of study procedures; current prescription of anti-craving medication or other medication that could affect drug cue-reactivity; or current opioid withdrawal (score > 4 on the Clinical Opioid Withdrawal Scale; Wesson & Ling, 2003).

Data were collected from 52 participants (11 women). The mean age of the sample was 27.2 years (SD = 9.3) and the sample was predominantly White (85%) and non-Hispanic (81%); two participants declined to self-report race and 7 declined to self-report ethnicity. Characteristics of the sample are reported in Table 1.

Procedures

Participants completed a battery of self-reported questionnaires. Following completion of the study procedures, research staff debriefed participants, checked for the presence of elevated craving states, and provided monetary compensation. All procedures were approved by the local Institutional Review Board.

Measures

The Drug Use Motives Questionnaire (Mueser et al., 1995; Cooper et al., 1992) is a 15-item measure designed to assess common motives for substance use. These motives are categorized into three domains: 1) social (to adhere to social norms or to facilitate social engagement), 2) enhancement (to feel "high," euphoric, or other pleasurable effects), and 3) coping (to achieve relief from unwanted distress). Each item is scored using a Likert-type scale ranging from *"Almost Never/Never"* to *"Almost Always/Always."* This questionnaire has demonstrated high internal reliability (Mueser et al., 1995), test-retest reliability and predictive validity (Grant et al., 2007). In the Drug Use Motives Questionnaire, the items of the "coping" subscale address negative affect (e.g., "to forget your worries," "to cheer you up when you are in a bad mood"), but do not address physical symptoms, such as pain. Accordingly, for the purpose of this study, we used the original Drug Use Motives Questionnaire scale to capture "negative affect coping" and added 5 questions to specifically address coping with pain. These items included "Because I was in physical pain (not due to withdrawal)," "To relieve pain," "Because it helps with pain," "To numb physical pain," and "Because it makes you feel less pain." These items were added to the end of the measure. Higher averaged subscale scores (range 1 to 5) reflect a higher frequency of using substances for these motives. Internal consistency for all subscales were strong to excellent (Table 2).

Two additional scales were administered to measure pain and anxiety severity, respectively. The Brief Pain Inventory – Short Form (Cleeland, 1989) is a questionnaire examining levels of pain severity and pain interference. Average subscale scores are calculated (range 0 to 10), with higher scores indicating greater levels of pain severity and interference. Although normative data are not available for OUD samples, average scores in chronic pain samples are between 6-7 for both pain interference and pain severity, reflecting moderate to severe pain (Nicholas et al., 2019). This measure has demonstrated good internal consistency reliability and construct validity (Gjeilo et al., 2007; Tan et al., 2004). Internal consistency in this sample was excellent for both pain severity (alpha = .91) and pain interference (alpha = .92).

The State-Trait Anxiety Inventory – Trait Anxiety scale (Spielberger et al., 1970) is a 20-item measure evaluating anxiety proneness. The scale items are summed (range 20 to 80), with higher scores reflecting greater susceptibility to feelings of anxiety in threatening situations. This measure has demonstrated strong internal consistency, test-retest reliability, and concurrent and construct validity (Rule & Traver, 1983). Internal consistency in this sample was strong (alpha = .87).

Data Analysis

All data were first examined for evidence of skewness and univariate outliers; none were detected. We then examined correlations among the four subscales on the Drug Use Motives Questionnaire to characterize the strength of associations between the pain motives subscale and other motives. To test our second aim, we examined Pearson's correlations between the pain and negative affect coping scales and symptoms of pain and anxiety. We formally compared the magnitude of these correlations to determine whether they were significantly different (Meng et al., 1992). All analyses were conducted in SPSS Version 20.

Results

Descriptive statistics are presented in Tables 1 and 2. More than 2/3 of participants reported experiencing pain on the day of the study session, with the most common being neck/back pain (49%) and hip/leg/foot pain (43.4%). There was substantial variability in pain severity and interference. On average, the sample reported mild pain severity and interference. However, there was a substantial range from no pain to moderate pain severity (0-6.5), and no interference to severe interference (0-7.9). On average, the sample reported significant anxiety, exceeding recommended cut-offs for clinically significant anxiety (Knight et al., 1983).

Aim 1.

Although moderate correlations among the Drug Use Motives Questionnaire subscales were observed, the pain coping scale was not significantly correlated with any other motives, including negative affect coping motives. Mean scores and correlations are reported in Table 2.

Aim 2.

Correlations with symptom severity were consistent with hypotheses. Negative affect coping was associated with greater anxiety symptom severity ($r = .45$, $p < .01$), but not pain severity ($r = -.11$, ns) or pain interference ($r = .11$, ns). Conversely, higher pain coping motives scores were associated with greater pain severity ($r = .51$, $p > .001$) and pain interference ($r = .39$, $p < .01$), but not with anxiety ($r = -.05$, ns).

We formally compared these correlations to determine if these differences were statistically significant. The correlation between negative affect coping motives and anxiety was significantly higher than the correlation between pain coping motives and anxiety (r difference = .50, 95% CI = .11, .75, $p < .05$). The correlation between negative affect coping motives and pain severity was significantly lower than the correlation between pain coping motives and pain severity (r difference = −.62, 95% CI = −.80, −.24, $p < .01$). However, the correlation between negative affect coping motives and pain interference was not statistically different from the correlation between pain coping motives and pain interference (r difference = −.28, 95% CI = −.62, .12, $p = .17$).

Discussion

This study investigated the associations among motives for opioid use in a sample of adults with OUD receiving inpatient or residential treatment. Pain coping motives and negative affect coping motives were not correlated, suggesting that the use of opioids to cope with pain and use of opioids to cope with negative emotional states are not correlated and should be assessed and conceptualized separately. People with more pain severity and pain interference reported using opioids more frequently to cope with pain (but not anxiety) and people with more anxiety reported using opioids more frequently to cope with negative affect (but not with pain). Accordingly, these findings underscore the importance of specifically assessing pain coping motives, *separately* from coping with negative affective states.

Several studies have suggested that pain coping motives are common reasons for opioid analgesic misuse across the spectrum of severity, ranging from misuse to people with substance use disorders (Han et al., 2018; Votaw et al., 2019; Weiss et al., 2014). However, the relative importance of pain coping may vary across the spectrum of severity, with pain coping initially reflecting the primary motive for use and other motives increasing as severity worsens or with longer periods of use. In this study, on average, all four motives subtypes (coping, social, negative affect coping and pain coping) were reported to occur at least sometimes.

It was unexpected that the correlation between negative affect coping motives and pain coping motives was *lower* than the correlation between negative affect coping and other motives (e.g., enhancement). One possible interpretation of this finding is that pain is truly unique and highly distinct from other motives, including other coping-related motives. Another possibility is that this is a reflection of unique features of our sample, which included people with severe OUD with a range of pain severity. Whether these findings would be similar in samples that have greater pain severity (e.g., people with OUD seeking

treatment in a pain clinic), or in samples with lower severity of OUD, is an important future research direction.

This study has several limitations. The pain items were added to the Drug Use Motives Questionnaire and have not been previously validated. This could have contributed to the modest correlations with the other subscales. Nonetheless, the data suggesting that pain coping motives were strongly associated with pain severity and interference increases confidence in our findings. There are also limitations to the use of self-report of motives as this can be influenced by respondents' awareness of their motives for substance use. The sample size for this study is modest; and replication of these findings is needed. Larger samples will be needed to utilize more refined methods, such as factor analysis to determine the distinctions among motives for use. This is a cross-sectional study, and temporal associations cannot be established. Characterizing the association between motives and outcomes longitudinally will be an important future research direction. Furthermore, considering other types of distress, including depression and other negative affective states, will be an important future research direction. Finally, the sample was predominantly White and non-Hispanic/Latinx and all were receiving inpatient or residential level substance use disorder treatment; generalizability beyond these groups cannot be assumed.

Results of this study suggest that pain coping motives and negative affect relief motives may be distinct reasons for opioid use. These motives were associated with symptoms in the expected direction, such that higher pain severity was associated with use of opioids to cope with pain and heightened anxiety was associated with use of opioids to cope with negative affect. These findings suggest that the addition of pain coping motives subscales to these measures may enhance understanding of the reasons for opioid use among people with OUD.

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Table 1

Sample Characteristics

Age, mean (SD)	27.2 (9.3)
Gender (% female)	21.2%
Race (% White)	85%
Primary Opioid (%)	
Opioid Analgesics	42.3%
Heroin	45.3%
Both	11.5%
History of injection use (%)	47.2%
Pain Characteristics	
Pain today	67.3%
Location of pain (%) [*]	
Head	17%
Neck/back	49.1%
Shoulder/arm	26.4%
Trunk/chest	13.2
Hip/leg/foot	43.4%

Note.

[*] Categories are not mutually exclusive

Table 2.

Correlations and Descriptive Statistics

	1.	2.	3.	4.	5.	6.	7.
1. Negative Affect Coping Motives	1.00	-		-	-	-	-
2. Pain Coping Motives	−0.07	1.00					
3. Enhancement Motives	.60**	.09	1.00	-		-	-
4. Social Motives	.71**	−.03	.53**	1.00			-
5. Anxiety Severity	.45**	−.05	−.04	.33*	1.00	-	-
6. Pain Severity	−.11	.51**	−.24	−.19	.15	1.00	-
7. Pain Interference	.11	.39**	−.19	−.04	.21	.75**	1.00
Mean (SD)	3.22 (.81)	2.42 (1.03)	3.27 (.66)	2.38(.87)	51.63 (8.48)	2.79 (2.03)	2.85 (2.39)
Cronbach's alpha	.87	.95	.78	.83	.87	.91	.92

Note. Motives were assessed using the modified Drug Use Motives Questionnaire, anxiety was assessed with the State Trait Anxiety Inventory, and pain severity and interference were measures with the Brief Pain Inventory.

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Correlation is significant at the 0.01 level (2-tailed).

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Correlation is significant at the 0.05 level (2-tailed).