The Role of Boredom and Psychosocial Factors in Predicting Illicit Substance Use in Patients Receiving Methadone Maintenance Therapy

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ABSTRACT

BACKGROUD: Methadone maintenance therapy (MMT) is commonly used for opioid dependence. Despite MMT's effectiveness, continued use of illicit drugs is common. Research suggests that various biopsychosocial factors (e.g., psychiatric symptoms, opiate cravings) are predictive of continued drug use in MMT patients. Boredom, a state of cognitive and affective discomfort in under-stimulating situations, may be another factor contributing to drug use. While boredom hasn't been extensively studied in MMT populations, research suggests that it plays an important role in substance use behavior.
AIM: This study's aim was to examine how boredom interacts with other biopsychosocial factors to predict concurrent drug use in 275 MMT patients.
METHOD: Patients completed self-report measures. Urinalysis results were obtained from medical charts.
RESULTS: There were significant associations between the number of opiate-free urine tests and: personal well-being (r= .191), anxiety (r= -.167), depression (r=-.156), boredom frequency (r= -.208), and the degree to which boredom impacted quality of life (r=-.156). A stepwise regression found that when adjusting for a variety of psychosocial variables, high levels of boredom predicted high numbers of opiate-positive urine tests F(1,117) = 5.77, p =018. When combined with personal well being and the degree to which patients felt their methadone dose was sufficient, boredom predicted slightly more than 17% of variance in the number of opiate- positive urines, F (3, 117) =8.21, p <.001.
CONCLUSIONS: These findings suggest that boredom, along with other biopsychosocial factors, plays a role in concurrent opiate use in MMT patients. Clinicians should recognize and address high levels of boredom in order to improve MMT outcomes.

INTRODUCTION

- MMT is an effective and widely used treatment for opioid dependence[1, 2, 3]
- Despite this, a large percentage of MMT patients continue to use opiates illicitly or not as prescribed.
- Concurrent substance use in MMT patients has been associated with poor retention in treatment[4] and other negative health and psychosocial outcomes[5].
- The following have been found to be associated with concurrent illicit drug use in MMT patients: psychiatric symptom severity, inadequate dosing of methadone[6], and pain[7].
- Boredom is a state of cognitive and affective discomfort, arising from attentional constraint to uninteresting and under-stimulating situations. It is associated with a variety of negative outcomes, such as increased frequency of psychotic disturbances, substance use, impulsive behaviors, social and interpersonal dysfunction, and feelings of lack of purpose[8].
- The limited research that has been conducted to date consistently shows that boredom plays a role in the course of substance use disorders. For example, qualitative and quantitative studies reported that boredom is frequently cited as a trigger to use substances in clinical and nonclinical samples[9, 10].
- Only one study to date has examined the role of boredom as a trigger to use substances in a sample of MMT patients[11]. Results found that a large portion of the sample (68%) reported drinking alcohol "to stop feeling bored." Limitations of this study included the small sample size (n=50), and the lack of an attempt to assess and quantify the levels of self-reported boredom (e.g., in terms of frequency, duration, severity and other relevant attributes) in the sample as a whole.
- Given the above findings, the aim of the current study was to examine the impact of boredom on illicit substance use behavior in a sample of patients recruited from two large multi-clinic MMT programs in New York City.
- We hypothesized that high levels of boredom would be associated with high levels of concurrent illicit drug use.
- We were particularly interested in learning whether boredom could be predictive of illicit substance use independent of other potential predictive factors such as inadequate methadone dosing, impulsivity, pain, and psychiatric disturbance.

METHOD

Procedure: Data were obtained from patient interviews, self-report measures, and patient records.

Participants: N=275 methadone maintained patients were recruited from methadone maintenance programs at two large hospital centers in New York City

Table 1: Descriptive information of sample (n= 275)

Age		
	Mean	47.40
	SD	8.70
Gender (%)		
	Male	62.2
	Female	37.8
Race (%)		
	AA/Black	41.1
	Latino/Hispanic	37.1
	White	17.1
	American Indian	2.5
	Biracial	2.2
Education		
	< 8th grade	3.7
	8th grade	4.0
	Some high school	52.4
	High school diploma	24.0
	Some college	12.3
	College diploma	2.5
	Post college/graduate school	1.1
Marital Status		
	Never married	42.5
	Married	22.9
	Divorced/Separated	23.6
	Widowed	9.8
	Missing	1.2
Homeless		
	Yes	21.5
	No	78.5
HIV Status		
	Positive	19.3
	Negative	80.7

Measures

Boredom: *State Boredom Measure (SBM)*, an 8-item self-report measure of recollections, attributions, and perceptions of episodes of boredom during the past 2 weeks. Only items 1 (boredom frequency) 2 (boredom duration) and 5 (the degree to which boredom impacts quality of life) were used for the current study[11]

Satisfaction with Life and Personal Well Being: *The Satisfaction with Life Scale (SWLS)*[12] and *Personal Well Being Index (PWBI)*[13]

Impulsivity: *Barratt Impulsiveness Scale (BIS)*[14]

Psychiatric Symptoms: *Brief Symptom Inventory (BSI):* self report, yields the following scores: overall severity of symptoms (i.e., the Global Severity Index or GSI), overall degree of distress related to symptoms (i.e., the Positive Symptom Distress Index or PSDI), Anxiety subscale (BSI-A) and Depression subscale (BSI-D)[15].

Pain: *Brief Pain Inventory (BPI),* self-report, yields 2 scores: Pain Severity score (BPI-PS), and Pain Interference score (BPI-PI)[16]

Self Report Substance Use in past 30 days: Addiction Severity Index Lite (ASI-Lite)[17]

Current Methadone Dose: taken from clinic records

Feeling "Held" by current Methadone Dose: degree to which dose left participant free of cravings for heroin or other opiates (self report, 7 point Likert scale).

Outcome Variable

Urinalysis: The total number of urine drug tests positive for only methadone in the past 12 months; taken from clinic charts

RESULTS

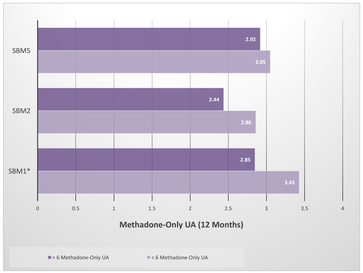
Boredom:

SBM scores were negatively associated with the number of methadone-only urine analysis results in the past 12 months suggesting those who are more bored are unlikely to be abstinent from illicit substances

- SBM-1: r = -.208, p = .002
- SBM-2: r = -.171, p = .012
- SBM-5: r = -.156, p < .029

We conducted independent t-tests to examine whether levels of boredom differed between those who has high levels of drug use (less than 6 methadone only UA tests) and low levels of drug use (more than 6 methadone only UA tests). Results are shown in Figure 1.

Figure 1: Mean self report SBM1, SBM2, and SBM5 scores stratified by low and high number of Methadone-only UA (* = p < .05)



Feeling "held":

- There was a significant inverse relationship between participants' ratings of feeling held and current prescribed dose of methadone: r = -1.64, p < .001.
- "Held" ratings were also found to be positively associated with the number of methadone only urine analysis results (i.e., "clean" urine): r = .17, p = .015.

We conducted independent t-tests to examine whether levels levels of methadone dose and methadone only UA differed between those who had high levels of feeling held (self-rating of higher than 4, adequately held) and low levels of feeling held (less than 4, or inadequately held)

Figure 2: Mean self report methadone dose scores stratified by feeling held or not feeling held (* = p < .05)

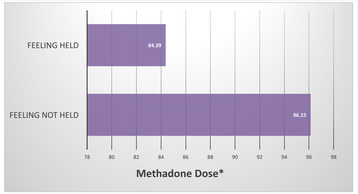
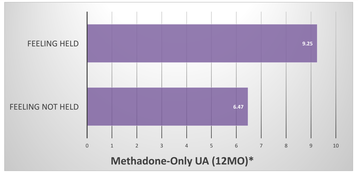


Figure 3: Mean self report Methadone-only UA by feeling held or not feeling held (* = p < .05)



Psychopathology:

Methadone-only urine analysis results was significantly associated with the following:

- BSI-D scores (r = -.156, p = .024),
- BSI-A scores (r = -.167, p = .016),
- PSDI scores (r = -.235, p < .001),
- PWBI scores (r = .191, p = .005).

We conducted an independent t-tests to examine whether levels of psychopathology differed between those who had high levels of drug use (less than 6 methadone only UA tests) and low levels of drug use (more than 6 methadone only UA tests). Results are shown in Figures 4 and 5.

Figure 4: Mean self report PSDI, BSI-Anxiety, and BSI-Depression scores stratified by low and high number of Methadone-only UA (* = p < .05)

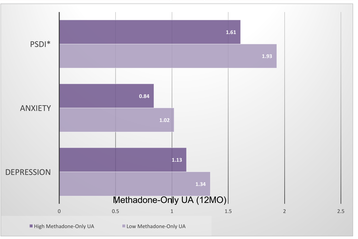
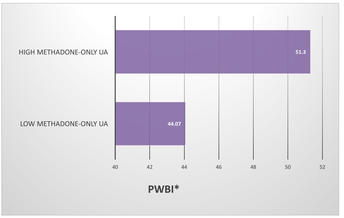


Figure 5: Mean self report Personal Well Being Index scores stratified by low and high number of Methadone-only UA (* = p < .05)



Hierarchical Regression:

- Self-reported recollections about boredom over the preceding 2 weeks predicted illicit substance use during the previous 12 months when controlling the extent to which patients felt "held" by their current methadone dose and the other observed correlates.
- with degree held, PWBI and SBM item 1 predicting 9%, 4% and 4%, respectively. Combined, the three variables significantly predicted slightly more than 17% of the unadjusted variance in the dependent variable, F (3, 117) =8.21, p <.001.
- Two self report items from the ASI-lite regarding substance use over the preceding 30 days were found to significantly improve prediction: Heroin use, R^2 change =.12, F(1, 116) = 19.00, p < .001; and Sedatives/Hypnotics/Tranquilizers use, R^2 change = .04, F(1, 115) = 7.28, p =.008. Indeed, with the addition of the two self reported drug use items, the amount of total variance explained by the model was effectively doubled to 30% (adjusted R^2 = .30 vs adjusted R^2 =.15).

Table 3: Hierarchical stepwise multiple linear regression predicting previous 12 month of positive urine analysis for illicit substance use (n= 275)

	R	R^2	ΔR^2	R^2 Change	B	Beta	t
Step 1:	.299	.090	.082	11.70	2.51		1.47
Degree held by current dose					1.638	.299	3.42
Personal Wellbeing							
Positive Symptom Index (BSI)							
Depression Subscale (BSI)							
Anxiety Subscale (BSI)							
Step 2:	.365	.133	.119	5.97			
SBM1							
SBM3 (?)							
SBM5							
Step 3:	.417	.174	.153	5.76			
Heroin use (ASI-lite)							
Sedatives/Hypnotics/Tranquilizers use (ASI-lite)							

DISCUSSION

Summary:

- MMT patients who are bored are more likely to endorse a variety of negative behaviors and feelings, including: continued use of illicit substances, dissatisfaction with life, and higher levels of reported pain, psychiatric complaints and impulsiveness
- Low levels or reported boredom, personal well-being, and feeling "held" were the best predictors of abstinence from illicit drugs in the past 12 months.
- Although an association between the degree "held" by the current dose and the methadone dose amount was to be expected, the inverse nature of the association was something of a surprise. The fact that there was no association found between dose amount and abstinence from illicit use suggests that a strategy of merely increasing the dosage of the "not held" patients may not be sufficient to quell drug seeking urges.

Implication:

- Results suggest that clinicians should be encouraged to regularly enquire about and help mitigate the prevalence of feelings of boredom in the daily lives of MMT patients, especially those who complain of being insufficiently "held" by their dose.

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