

Dissociative psychopathology among opioid use disorder patients: exploring the “chemical dissociation” hypothesis

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Abstract

Background: Although early trauma is a well-recognized risk factor for both dissociation and substance abuse, there are inconsistent reports on the association between substance abuse and dissociation. This inconsistency may be resolved by the “chemical dissociation” hypothesis that suggests that some substance abuse patients may not exhibit high levels of dissociation, despite their trauma history, because they may achieve dissociative-like states through chemicals consumption. This article describes 2 studies aimed to (a) assess the incidence of dissociative psychopathology among recovering opioid use disorder (OUD) patients and (b) examine the chemical dissociation hypothesis. **Methods:** One hundred forty-nine patients receiving treatment in a heroin recovery program and 46 controls were administered self-report measures of dissociation and childhood maltreatment in study 1. A similar battery and an assessment of addiction severity were completed by 50 methadone maintenance treatment (MMT) patients and 30 detoxified OUD patients in study 2. In addition, Structured Clinical Interview for *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition* Dissociative Disorders–Revised was administered to a subsample of MMT and detoxified OUD patients.

Results: Patients with OUD reported higher levels of child maltreatment and dissociation than controls. Although MMT and detoxified patients did not differ in severity of addiction and child maltreatment, detoxified outpatients had higher levels of dissociation than MMT outpatients: 23% of the detoxified patients and 12% of the MMT patients were diagnosed with a dissociative disorder.

Conclusions: These findings support the chemical dissociation hypothesis of OUD and suggest that detoxification programs should take into consideration the high incidence of comorbid dissociative disorders among their recovering OUD patients.

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1. Introduction

Dissociative disorders (DDs) and opioid use disorder (OUD) are thought to be related problems. Trauma history, particularly childhood trauma, seems to be an etiological factor in both [1]. That is, although early trauma is a well-recognized risk factor for dissociation (eg, [2,3]), a growing body of data provide evidence for its contribution to substance abuse. Accordingly, studies indicate that people with a childhood trauma history constitute a significant proportion of opioid users [4], severity of substance abuse is positively associated with severity of child abuse [5], and

recovering OUD patients report higher levels of traumatization compared with non-OUD outpatients [6–8]. Somer [1] posited that OUD might be the second stage of a strategy developed for coping with intolerable experiences and their memories when psychologic coping fails, when a rapid and efficient relief in posttraumatic pain is sought, and when substances are available. That is, when psychologic dissociation is ineffective, or when substances that are effectively able to produce immediate numbing are available, traumatized persons may look beyond their own mental resources for relief; when these victims get access to consciousness-altering substances, they may discover the immediate advantages of “chemical dissociation” and its rapid effect on both the body and the mind [7]. This is when chemical dissociation can become a self-medicating alternative.

Reports on the association between substance abuse and dissociation are less conclusive. On the one hand, there are

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indications that the 2 phenomena are related. For example, using the Dissociative Experiences Scale as a gauge of pathologic dissociation, Karadag et al [9] found that 37% of inpatients with alcohol or drug dependency had a score of 30.0 or above, which implied substantial dissociative pathology. Clinical interviews diagnosed DD among 17% of these substance abuse patients. Using the same Dissociative Experiences Scale cutoff point, Putnam et al [10] identified 22% of substance abuse patients with high dissociation, compared with 4% of a nonclinical sample. Finally, high levels of dissociative symptoms were observed among detoxified substance abusers [11].

However, there are studies demonstrating low levels of dissociation among alcohol-dependent patients ([12–14], questioning the validity of the relation between dissociation and substance use disorder. Langeland et al [13] suggest that this inconsistency may be resolved by the “chemical dissociation hypothesis.” More specifically, according to this suggestion, some substance abuse patients may not exhibit high levels of dissociation, despite constituting an at-risk group due to their trauma history, because they may achieve dissociative-like states through the chemicals they consume. This hypothesis is in line with the “self-medication hypothesis” of substance use disorder that posits that traumatized individuals use substances to control their emotional pain [15,16].

This article describes 2 studies aimed at assessing the incidence of dissociative psychopathology among recovering OUD patients and examining the chemical dissociation hypothesis among recovering OUD patients. In the first study, we compared trauma history and dissociative pathology among OUD patients and comparable controls. We hypothesized that trauma history and DD will be more prevalent among Israeli patients recovering from OUD than in a comparative clinical sample with no known history of substance abuse. The second study compares dissociative pathology among individuals with OUD undergoing methadone maintenance treatment (MMT) and OUD patients who completed an inpatient detoxification program. Based on the chemical dissociation hypothesis, we hypothesized that severity of dissociative pathology will be higher among the second, “unmedicated” OUD group.

2. Study 1

2.1. Method

2.1.1. Participants

A cohort of 149 patients receiving treatment in the main heroin recovery program of northern Israel participated in this research. The program consisted of either brief inpatient detoxification modules, followed by outpatient treatment, or MMT. Forty-nine patients were sampled from an inpatient detoxification program, 52 patients participated in a follow-up outpatient MMT program and, 48 patients were part of a follow-up residential treatment community. Methadone is a

synthetic agent that “occupies” brain receptor sites affected by heroin and other opiates, and the treatment therewith consists of monitored consumption thereof and the concomitant avoidance of street drugs. All study interviews were conducted at least 3 weeks after admission to the program, when stable abstinence was determined. Mean (SD) abstinence duration for patients was 25.3 (28.1) days (range, 21–73 days).

A cohort of 46 comparison patients, with no known histories of substance abuse, was sampled from an outpatient clinic specializing in stress- and trauma-related problems. Exclusion criteria for both groups were mental retardation, cognitive deficit, Hebrew illiteracy, and acute psychotic disorders.

2.1.2. Instruments

The Multidimensional Inventory of Dissociation (MID) is a 218-item self-report, multiscale measure of pathologic dissociation that yields a comprehensive dissociative profile and a suggested diagnosis [17]. The MID had a positive predictive power of .93, a negative predictive power of .84, and an overall predictive power of .89 for major DD (ie, dissociative identity disorder or DD not otherwise classified 1). The Hebrew version [18] has excellent consistency (Cronbach $\alpha = .99$) and very good internal convergent, as well as construct, validities. Principal components factor analyses of both the 13 primary scales of the H-MID and the 23 hypothesized symptoms of dissociative identity disorder produced 1-factor solutions that accounted for 81% and 79% of the variance, respectively. These 1-factor solutions suggest that all H-MID’s scales are aspects of a unitary phenomenon: pathologic dissociation. In this study Cronbach α s of the H-MID for the research and the control groups were .99 and .94, respectively. A cutoff score of 30 was assessed to be useful in screening for DDs (Dell, personal communication).

The Traumatic Experiences Checklist (TEC) [19] is a 25-item measure that assesses a wide range of trauma. The first 10 items assess the presence/absence of a wide variety of stresses and trauma (eg, having to look after parents and/or siblings as a child). The last 15 items assess the presence/absence of *abusive* experiences. The TEC yields an overall index of number of traumas experienced and weighted composite scores of 5 types of abuse (ie, emotional neglect, emotional abuse, physical abuse, sexual harassment, and sexual abuse). Three items load onto each composite scale with total scores for each determined by the relationship with the abuser, the age at which the abuse occurred, and subjective ratings of the impact of the experience. The TEC has good psychometric properties. Scores are stable over time (test-retest $r = .91$) and are moderately correlated with dissociation [19]. The TEC was translated into Hebrew, and the translated version was used with the Israeli sample.

A structured demographic questionnaire was designed by the authors to determine sex, age, years of education, marital status, ethnic background, and history of substance use.

2.1.3. Procedure

This research received written approval from the treatment centers' human subjects review committees and subjects participated with informed, voluntary, written consent. Data collection was conducted after a laboratory-verified detoxification period of at least 3 weeks, followed by 5 urine tests showing negative results. Laboratory tests ascertained that no traces of cannabis, benzodiazepines, amphetamines, opiates, or cocaine were present. Adult patients eligible for participation, who signed an informed consent form (86% response rate), were administered the research questionnaire in a group format. Patients were given instructions by one of the authors who was always present to answer any questions.

2.2. Results and discussion

A χ^2 test revealed no differences between the research and the comparison groups in terms of sex (females were 74.8% and 63%, respectively), ethnic background (eg, 25.2% and 32.6%, respectively, were second-generation Israelis) or marital status (eg, 35% and 30.4%, respectively, were married). An aparametric Mann-Whitney test revealed no differences between the research and the comparison group in age ($M = 36.7$, $SD = 9.2$, and $M = 38.1$, $SD = 9.2$, respectively) or number of years of education ($M = 11.6$, $SD = 3.1$, and $M = 12.5$, $SD = 3.4$, respectively).

More recovering OUD patients reported emotional neglect compared with the comparison patients (42% and 9%, respectively, $\chi^2 (1) = 15.440$; $P = .000$; 2-sided). A history of emotional abuse was more prevalent among recovering OUD patients than among controls (28% and 8%, respectively, $\chi^2 (1) = 6.481$; $P = .014$; 2-sided). Patients with OUD also reported more incidents of physical traumatization by strangers (30% and 7%, respectively; $\chi^2 (1) = 7.663$; $P = .006$; 2-sided).

The mean H-MID score for the OUD group was higher than that for the stress and trauma clinic controls ($M = 24.7$, $SD = 15.4$, and $M = 13.3$, $SD = 14.9$, respectively; $t (48) = 3.0$, $P < .01$). Table 1 describes the cross tabulation of the H-MID scores in the 2 research groups.

One third of the OUD group had mean H-MID scores indicative of probable DDs, whereas only approximately

Table 1
Cross-tabulation of mean H-MID scores and the research groups

Mean H-MID		OUD	Comparison group	Total
H-MID ≤ 15	n	78	30	110
	%	52.3	65.2	56.4
16 \leq H-MID < 30	n	21	11	34
	%	14.1	23.9	17.4%
H-MID ≥ 30	n	50	5	51
	%	33.4	10.9	26.2
Total	n	149	46	195
	%	69.8	30.2	100.0

Table 2

Cross-tabulation of mean H-MID scores and the research groups

Mean H-MID		Detoxified inpatient	MMT	Total
10 \geq H-MID	n	6	24	30
	%	20	48	37.5
16 \leq H-MID < 30	n	12	20	32
	%	40	40	40
H-MID ≥ 30	n	12	6	18
	%	40	12	22.5
Total	n	30	50	80
	%	37.5	62.5	100.0

11% of patients attending a stress and trauma clinic scored about the cutoff score of 30, thus confirming the research hypotheses of study 1 and supporting findings from previous reports [4,9].

Although our data provide an indication for increased risk for DD in OUD patients, no conclusive determination can be made concerning the actual incidence of DD in this population without a clinician-administered diagnostic interview. To further assess the prevalence of DD among individuals with OUD, we conducted a second study, adding a clinician-administered, structured, diagnostic interview to the self-report measure of dissociative pathology. We also assessed the severity of addiction, to examine its association with DD. To investigate the chemical dissociation hypothesis, we compared dissociative pathology of OUD patients undergoing MMT and an OUD group after a detoxification program. We assumed that MMT would provide some dissociative function, chemically, and therefore predicted higher levels of psychologic dissociation in detoxified OUD patients who were not treated with synthetic heroin (chemical dissociation) (Table 2).

3. Study 2

Study 2 was conducted 3 years after completion of data collection for study 1 and when the original participants were no longer available for further research.

3.1. Method

3.1.1. Participants

A different cohort of 80 OUD patients were sampled from the same MMT and inpatient detoxification treatment facilities described in study 1. The MMT group included 50 respondents (75% response rate), with a mean (SD) age of 43.5 (9.81) years and average (SD) continuous treatment duration of 3.88 (2.41) years. The MMT respondents had a mean (SD) laboratory-verified abstinence period of 1.75 (1.31) years.

The inpatient detoxification group included 30 individuals (91% response rate), with an average (SD) age of 33.45 (10.59) years, who were in the third and final week of their treatment program. Compared with the MMT participants,

this group was younger ($t = 4.305_{(78)}$, $P < .001$), included more singles (60% versus 18%), and had less married respondents (10% versus 42%). Exclusion criteria were similar to those applied in study 1.

3.1.2. Instruments

We used a demographic instrument similar to that described in study 1. We also used the Hebrew Multidimensional Inventory of Dissociation (H-MID) described in study 1.

Addiction severity was measured with an adaptation of the Addiction Severity Index (ASI)–Lite ([20,21]. Twenty-nine ASI-Lite items inquiring about the nature of the addiction were included in our research instrument. Typical questions related to the types of drugs abused, duration of use, amount and method of consumption, drug-related problems, detoxification attempts, history of treatment, and others. Most questions were open (eg, asking about number of days or number of times), and some asked for a score on a 5-point Likert scale. The ASI has been used with a variety of substance abuse populations and has been shown to have high reliability and validity [20,22,23]. Internal consistency was reported to range between $\alpha = .80$ and $\alpha = .92$ [24,25].

Childhood trauma was assessed with a brief version of the Childhood Trauma Questionnaire [26]. The short Childhood Trauma Questionnaire [27] includes 28 items for rapid screening of maltreatment histories. It evaluates 5 types of childhood trauma: physical, sexual and emotional abuse, and physical and emotional neglect. Internal consistencies ranged between $\alpha = .79$ and $\alpha = .94$ [28].

The Structured Clinical Interview for *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV)* Dissociative Disorders–Revised (SCID-D-R) [29] was used in the second stage of the study. It is a clinician-administered interview that evaluates the severity of core dissociative symptoms and diagnoses the DDs based on DSM-IV criteria [30]. It is recognized as the criterion standard for the diagnosis of the DDs [31] because of its high to excellent psychometric characteristics (eg, [29,31–35].

3.1.3. Procedure

This research received written approval from the University of Haifa institutional review board. All adult patients eligible for participation who signed an informed, voluntary, written consent form were included in this study. Data collection was conducted after abstinence-verifying urine tests similar to those used in study 1. All research questionnaires were administered as structured interviews. In the second stage of data collection, respondents whose H-MID scores were higher than 30 were interviewed with the SCID-D-R by the second author. We also interviewed individuals with a low H-MID score. Budget constraints required that we limit the size of the low dissociation group. Consequently, we interviewed every second respondent who scored 10 or lower on the H-MID.

3.2. Results and discussion

χ^2 tests revealed no differences between the detoxified inpatients and the MMT group in terms of sex (males were 70% and 84% ,respectively), country of birth (63.3% and 68% were born in Israel), and religion (76.7% and 76% were Jewish). Age at first drug use was similar among respondents from both groups ($M = 15.03$, $SD = 3.69$ for the inpatients; $M = 16.87$, $SD = 5.47$ for the MMT; $t_{(76)} = 1.6$, NS), as were addiction severity scores ($M = 0.39$, $SD = 0.12$ for the inpatients; $M = 0.39$, $SD = 0.09$ for the MMT group; $t_{(77)} = 0.0$, NS). Finally, the groups did not differ on their chronic childhood traumatization scores ($M = 61.43$, $SD = 19.64$ for the inpatients; $M = 58.41$, $SD = 20.65$ for the MMT group; $t_{(77)} = 0.64$, NS).

Chronic childhood traumatization in general and child sexual abuse in particular were significantly correlated with addiction severity in both groups (MMT: $r_p = .49$, $P < .01$; $r_p = .43$, $P < .05$; and detoxified inpatients: $r_p = .29$, $P < .05$; $r_p = .40$, $P < .01$). Chronic childhood traumatization in general and emotional abuse in particular were associated with dissociative psychopathology among the MMT and the detoxified inpatients ($r_p = .41$, $P < .05$; $r_p = .66$, $P < .001$ and $r_p = .47$, $P < .001$; $r_p = .58$, $P < .001$, respectively). Dissociative psychopathology and addiction severity were correlated only in the detoxified inpatients group ($r_p = .45$, $P < .05$).

Data of H-MID revealed that 40% of the detoxified inpatients had scores indicative of probable dissociative psychopathology ($M \geq 30$), compared with only 12% of the MMT group ($t_{(2)} = 10.45$, $P < .01$). Interviews by SCID-D-R with detoxified inpatients whose H-MID scores exceeded 30 revealed that 13 (16.25% of the total sample) met the diagnostic criteria for a DD: 6 MMT patients (12% of that group) and 7 inpatients (23% of that group). Five recovering OUD patients met the diagnostic criteria for dissociative amnesia, 4 met the diagnostic criteria for DD not otherwise classified, 2 the met diagnostic criteria for depersonalization disorder, 2 met the diagnostic criteria for dissociative identity disorder. Interviews by SCID-D-R with patients whose H-MID scores were less than 10 identified 1 patient with dissociative amnesia.

There was a significant correlation between H-MID and SCID-D-R scores among detoxified inpatients and MMT respondents alike ($r_p = .63$, $P = .05$, and $r_p = .76$, $P = .001$, respectively).

These findings replicate data reported in study 1, further supporting the role of history of childhood trauma in both DD and OUD. Moreover, the higher incidence and more severe level of dissociative psychopathology among detoxified inpatients receiving no synthetic heroin substitutes (MMT) render support to the chemical dissociation hypothesis.

4. General discussion

Recovering OUD patients were 3 times more likely to have a probable DD than patients in a stress and trauma

clinic. The frequency of confirmed DDs among individuals treated for OUD was 16.25%. Because respondents who scored between 10.0 and 30.0 were excluded, this should be considered a conservative estimate. This rate is almost identical to the results found in a Turkish group of inpatients with alcohol and substance dependency [9] and is similar to results reported by Dunn et al [36]. None of the individuals identified in this study as having DD had previously been thus diagnosed. The co-occurrence of substance abuse and DSM-IV axis 1 disorders (dual diagnosis) is relevant from both sides. Findings from the National Survey on Drug Use and Health [37] showed that more than 23% of adults with serious mental illness in the United States were dependent on alcohol or illicit drugs, compared with 8.2% among adults without serious mental illness and that 20.4% of adults with substance abuse or dependence had a serious mental illness. Dual diagnosis patients pose serious treatment challenges and create devastating results for both patients and their families due to poor treatment compliance, long-term disability, heightened mortality, increased risk of suicidal and violent behaviors, and overall poorer adaptation and functioning [38].

It is widely accepted that an underlying psychopathology may contribute to the development of heroin addiction [39], but in the case of comorbid dissociative psychopathology, the directionality of this relationship is still being debated. The relation between OUD and DD may reflect 2 alternative mechanisms (for discussion on possible causal mechanisms linking substance use and mental health disorders, see [40]). According to the first, OUD precedes the manifestation of the DD, either by causing the dissociative phenomenon or by triggering a dormant disorder. This explanation is presented by Wenzel et al [11], who showed a strong correlation between number of years of substance use and dissociation, among detoxified patients. Alternatively, it is possible that the OUD followed earlier dissociative tendencies. This hypothesis is supported by a few retrospective studies that traced the date of onset of both the substance use disorder and the dissociative pathology [41–43] and is in line with the idea that when psychologic dissociation is not effective in blunting traumatic feelings and when illicit drugs are available, chemical dissociation can become a chosen strategy for dealing with emotional pain [1].

Comparing the detoxified and the MMT patients, we found that the rates of DD were more than 3 times higher among the first. Because the 2 groups did not differ in either trauma history or severity of addiction, it seems plausible to assume that this difference in level of dissociation derives from the nature of the 2 treatment programs, rather from preselection of patients. This assumption is in line with the chemical dissociation hypothesis that considers substance use as self-medication. As long as the addicted individuals use drugs, or are maintained by methadone as an alternative to illicit street drugs, the chemical dissociation serves as a protective shield against the painful memories. However, the detoxified OUD patients who abandon the blunting shield

provided by the drug may find themselves confronted again by pain and distress and in need of an alternative psychologic coping mechanism [44,45]. Though destructive in many ways, pathologic dissociation can serve as a potent mechanism against traumatic memories and related emotions [6]. The chemical dissociation hypothesis is in line with the posttraumatic stress disorder self-medication model, as well as with recent data suggesting that the association between posttraumatic stress disorder and substance use disorder may be fully mediated by general negative affect, including trauma symptoms and depression (eg, [46]).

These findings should be considered in light of limitations such as small sample size, the retrospective nature of the childhood trauma measurement, the fact that the clinician who conducted the SCID interviews was not blind to the H-MID results, and a cross-sectional design of the studies that prohibits the determination of causal relations between the study variables. To establish causal relations between these variables, comprehensive longitudinal studies to systematically study these OUD populations are needed. Another limitation is associated with the differences between the MMT and the inpatient groups. Compared with the MMT participants, inpatients were younger. It could be argued that higher dissociation in the inpatient group is, at least partially, explained by its younger age (eg, [47]). However, although younger age might be associated with elevated levels of dissociative experiences (as measured with the Dissociative Experiences Scale [48]), dissociative psychopathology as diagnosed in this study has not been shown, to the best of our knowledge, to be associated with younger age. Methadone maintenance treatment patients were abstinent for a mean of 1.75 years, whereas detoxified OUD patients were drug-free for only 3 to 4 weeks. Duration of abstinence alone might, arguably, contribute to the observed differences in dissociation in these 2 populations. However, this is an improbable causality because no evidence to date has demonstrated spontaneous remission for dissociative psychopathology. It could also be argued that the stress associated with opioid withdrawal may have caused pathologic dissociation. To test that hypothesis, a control group of detoxified OUD patients without a trauma history might have been included for comparison. However, a causal relationship between the transient stress of opioid withdrawal and pathologic dissociation is highly unlikely inasmuch as DDs are associated with chronic childhood trauma, not acute stress [10].

Although many mental health professionals lack knowledge and experience in diagnosing and treating DD (eg, [49]), the findings of this study imply that these skills are of great significance for those who treat OUD patients in general and detoxified individuals in particular. Correct identification of likely comorbid DD using the Dissociative Experiences Scale [48] as a screening instrument, followed by referrals of suspect cases for further expert evaluation and treatment, might contribute toward the amelioration of underlying traumatic pain and may help decrease the unfortunate “revolving door career” often observed among

detoxified patients who endorse comorbid mental health disorder [50].

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