

The tridimensional personality of male heroin users treated with methadone in Taiwan

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Abstract

It was our assumption that male heroin users have the personality traits of high impulsivity and low social interaction. Compliance regarding methadone maintenance therapy (MMT) is hypothesized to be related to personality features. We recruited 43 patients that had been receiving MMT and 43 healthy volunteers. All participants completed a Tridimensional Personality Questionnaire (TPQ). Information related to the Opiate Treatment Index (OTI) was gathered from the heroin group. The personality dimensions in the heroin user group and the control group were compared. We further investigated the association between TPQ and OTI. The heroin group presented with lower reward dependence than the control group. Regarding sub-dimensions, heroin users showed higher impulsivity and fatigability, and lower exploratory excitability and social dependence. The explosive (borderline) pattern was more common among the heroin users. The odds ratio of explosive pattern developing to heroin dependence was 4.19. Q scores of heroin use and the maximal methadone dose were associated with persistence.

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1. Introduction

Heroin dependence is a chronic medical illness which causes psychological, physical, social and economical problems [1]. There are 12–21 million persons using opiates in the world and 75% of them are heroin abusers [2]. The relapse rate of heroin dependence is high and methadone maintenance therapy (MMT) has become an important treatment model to help ensure harm reduction [3]. In Taiwan, MMT has been proven to effectively reduce related health and social problems [4]. Many patients suffering from heroin dependence start to enter the medical care system via MMT.

Both personality traits and the environment play important roles in the development of heroin dependence [5,6]. Previous studies have found that the personality features of

male heroin abusers can be described as anxious, impulsive, fatigable, and socially detached [7,8]. Seventy-seven percent of heroin abusers have at least one diagnosis of personality disorder in DSM-IV [9]. Borderline and antisocial are the most frequently mentioned categories of personality disorder [10,11]. Such personality features also affect the outcome of treatment and substance use behaviors. The Cluster B personality trait has been reported to require the use of a high methadone dose and has a poor prognosis [12,13]. Low and normal retention rates for patients with antisocial personality disorder are found in a number of distinct research studies regarding this topic [14,15]. One of the more recent tools used to investigate personality traits is the Tridimensional Personality Questionnaire (TPQ), which is based on Cloninger's psychobiological model of personality [16]. TPQ has been widely used in studies of substance abuse [17,18]. The questionnaires consist of three genetically independent dimensions, novelty-seeking (NS), harm avoidance (HA) and reward dependence (RD). Patients with heroin dependence show higher novelty seeking and self-directedness than patients with alcohol dependence [17].

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High novelty seeking is associated with drop-out from treatment, while high harm avoidance is related to abstinence [18,19]. Some inconsistent results warrant further clarification and study.

The Opiate Treatment Index (OTI) is one of the most comprehensive tools for the evaluation of heroin dependence. It can measure drug use patterns, risk-taking behaviors, social functioning, and has been proven to have good validity [20,21]. OTI can be used to evaluate treatment outcome, and also to provide reliable information with regards to personality research in opioid-related disorders. We hence applied both the OTI and TPQ to establish the correlation between drug use behaviors and personality traits.

There were two major goals in the present study. One was to explore the personality features of male heroin users in Taiwan. The other was to identify the relationship between personality traits and substance use behaviors of male heroin users. The study aimed to examine the following hypotheses. Firstly, we hypothesized that the composition of some personality dimensions, showing high impulsivity and low social interaction, is related to heroin dependence [7,10]. Second, we assumed that some substance use behaviors, such as frequency of heroin exposure, compliance of MMT, and comorbidity of other substance-related disorders, are associated with personality features. To the best of our knowledge, this is the first study to investigate the relationship between TPQ and OTI in Asian countries.

2. Methods

2.1. Participants

Forty-two heroin users were recruited by advertisement from the outpatient methadone maintenance therapy clinics of the Department of Psychiatry, National Taiwan University Hospital, Yun-Lin Branch, Taiwan. All of them fulfilled the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR) criteria for opioid dependence, which was ascertained by a board-certified psychiatrist. They received methadone therapy in the morning (08:30–12:00) and were investigated by using questionnaires such as TPQ, State and Trait Anxiety Inventory (STAI), Beck Depression Inventory (BDI), and OTI. Their heart rate, body temperature, respiratory rate were stable and within a normal range. None of them presented with overt opioid withdrawal symptoms during the investigation. Forty-three healthy volunteers without illicit drug, alcohol or tranquilizer use were recruited by advertisement from the same community. Since most heroin users are male, we only recruited male subjects in this study. Heroin users and healthy volunteers with a history of major systemic diseases, mental retardation, psychotic disorders, were excluded from this study. Participants' tobacco, tranquilizer or other illicit drug use was all recorded. Informed written consent was obtained

from all participants, and the experiment protocol was approved by the Ethics Committee of the National Taiwan University Hospital, Yun-Lin Branch, Taiwan.

2.2. Tridimensional Personality Questionnaire (TPQ)

TPQ, designed by Cloninger, is a self-reporting questionnaire with 100 polar questions [22]. The three major dimensions of TPQ are novelty seeking (NS), harm avoidance (HA), and reward dependence (RD). NS is composed of NS1 (exploratory excitability), NS2 (impulsivity), NS3 (extravagance), and NS4 (disorderliness). HA consists of HA1 (anticipatory worry), HA2 (fear of uncertainty), HA3 (shyness with strangers), HA4 (fatigability and asthenia). RD is divided into RD1 (sentimentality), RD3 (attachment), RD4 (dependence). RD2 (persistence) has been proven to be an independent concept to other RD sub-dimensions; therefore, it was not summarized in the total RD score. The Chinese version of TPQ that was translated by Chen et al. has good reliability and validity [23].

2.3. Opiate Treatment Index (OTI)

The OTI consists of six independent outcome domains that reflect the dimensions of treatment outcome, including drug use, HIV risk-taking behavior, social functioning, criminality, health status, and psychological adjustment. In the present study, we divide OTI into four domains: heroin use behavior (including onset of heroin use, duration of heroin use, last use of heroin, and heroin Q score), methadone use behavior (including duration of methadone treatment, time of joining methadone treatment, maximal methadone dose, and last use of methadone), other substance use behavior (including Q score of polysubstance, alcohol, amphetamine, tranquilizer, and cigarettes), and other information (including social functioning and criminality). The data obtained from the subject were then used to calculate an estimate of the individual's recent consumption by the formula: $Q = (q_1 + q_2)/(t_1 + t_2)$. q_1 and q_2 are the substance amount consumed on the last and the second last use occasion, t_1 is the interval between the last day, and next to last day of substance use, t_2 is the interval between the second and third last day of substance use.

2.4. Assessments of psychological state

BDI and STAI were used to measure the severity of depression and anxiety. BDI, a self-administered inventory with twenty-one multiple choice questions, measures cognitive and vegetative symptoms of depression [24]. STAI, an inventory using the 4-point Likert scale, is designed to measure both anxiety trait and anxiety state [25].

2.5. Statistical analysis

Comparisons of the demographic data, TPQ, STAI, BDI scores between heroin users and control group were performed using the independent t test. Statistical significance was assumed for $p < 0.05$. Values are expressed as means \pm standard deviation. The scores of three major

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