

The affective temperaments as a prognostic factor in the course of alcohol addiction – a key to enhance diagnoses and therapy?

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Abstract

The paper outlines the role of affective temperaments, as defined by Akiskal, in the development and maintenance of alcohol use disorders with a particular focus on the clinical course of addiction.

Among affective temperaments, a cyclothymic temperament seems to play a key role in the development and maintenance of alcohol use disorders, and have the greatest influence on the clinical course of addiction. A high cyclothymic score is associated with *inter alia* an earlier onset of drinking and alcohol dependence, a negative course of alcohol dependence, relapse and alcohol craving. The structure of affective temperaments is also a predictor of suicidal behavior and drug addiction in the alcohol addict population.

Interest has been growing regarding the role of affective temperament in the development and course of alcohol dependence; however, further research in this area is needed. An understanding of the temperamental determinants of alcohol dependence in the affective dimension may significantly support diagnostic and therapeutic procedures. Affective temperament profile may be suggestive of alcohol use disorders and may be a primary prognostic factor of craving and relapse, potential suicide, treatment motivation and the co-occurrence of drug dependence among patients with alcohol use disorder.

affective temperaments; hyperthymic; cyclothymic; alcohol use disorder; alcohol addiction

INTRODUCTION

The clinical significance of affective temperament was originally investigated in the context of affective disorders, where it was conceptualized as an element of the unipolar and bipolar

mood disorder spectrum [1–4]. However, interest in its role in the development and course of alcohol dependence has been recently growing; indeed, a strong and multidimensional association has been repeatedly noted between alcohol use disorder (AUD) and mood/anxiety disorders in epidemiological and clinical studies [5,6]. The temperamental level of affectivity has proved to influence the initiation of alcohol use and the development and course of addiction [7]. Therefore, a thorough understanding of the temperamental determinants of AUD in the affective dimension may be of significant importance for diagnostic and therapeutic procedures.

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Although this article is not a meta-analysis, it provides a comprehensive overview of the research conducted so far in this area. However it should be emphasized that previous studies are scarce and explore only some aspects of alcohol dependence. There hence remains a need for deeper research into the practical implications of affective temperaments on the diagnosis and design of therapeutic programs; this is particularly important in the context of alcohol craving and the risk of relapse, as well as dual diagnosis and suicidality.

Affective temperaments in the domain of psychopathology

Temperaments describe the heritable and biologically-determined core component of personality which show a strong temporal stability throughout the lifespan. Most concepts of temperament have been based on data from the healthy population, whereas the affective temperament model (hyperthymic, cyclothymic, depressive, irritable, anxious) has been developed through observations of patients with mood disorders, based on the earlier concepts of Kraepelin and Kretschmer [1,2].

In the context of mental disorders, affective temperaments are conceptualized as the phenotypes reflecting the genetic disposition to develop a spectrum of mood disorders as either subthreshold or fullblown manifestations. The 5-HTTLPR functional polymorphism of the serotonin transporter gene has been described to be associated both with affective disorders and affective temperaments carrying a depressive component, that is, especially cyclothymic, but also depressive, irritable and anxious subscales which suggests that the 's' allele of the 5-HTTLPR conveys a general vulnerability towards the manifestation of threshold and subthreshold affective disturbances [8–10].

However, in the evolutionary perspective, affective temperaments should be considered rather as a continuum of health and pathology. Affective temperaments can be regarded as an adaptive disposition of emotional reactivity, whose dysregulation, occurring as an constellation of extreme form of particular types of temperament, may lead to the development of

full-blown affective symptomatology and thus various mental disorders [2,11,12]. Numerous studies indicate that the most functional and desirable temperament is hyperthymic, whereas depressive, irritable and anxious temperaments, especially cyclothymic, are associated with the occurrence of mood disorders [12]. A high level of cyclothymic temperament is recognised as a predictor of bipolar disorder (I and II type), while depressive temperament is associated with unipolar depression [11,13,15]. In addition, premorbid affective temperament profiles determine the clinical evolution of affective disorders affecting the long-term course and outcome [16].

Following Akiskal [1,11], a depressive temperament is characterized by low mood, introversion, low level of energy, much need for sleep, and low self-esteem, while a hyperthymic temperament shows high energy level, high self-esteem, and low need for sleep. In contrast, cyclothymic temperament is characterized by rapid affect fluctuations and changes in energy level, emotional lability, and an unstable sleep pattern. An irritable temperament is associated with a predisposition to impulsiveness and aggression, overreactivity to aversive stimulation with negative affect. An anxious temperament is associated with increased sympathetic activity, a tendency to worry most of the time and difficulty in leaving a familiar environment [3].

Role of affective temperaments in alcohol dependence

Therefore, the structure of affective temperaments determines emotional reactivity and regulates the reaction to environmental stimuli. As such, it is also may be an significant element of the etiology of alcohol use disorder [17,20].

Addiction can be understood as a painkiller for emotions; some theories suggest that alcohol consumption can be explained by a mechanism of overcoming negative affective states. However drinking alcohol may also be associated with the enhancement of positive affective states [18,19]. Similarly, tension-reduction and stress-response dampening models posits that alcohol is consumed to reduce a state of tension [20]. According to these models, the decision to drink or to maintain abstinence is based on in-

dividual affective experiences, and alcohol consumption is recognised as an outcome of preceding mood [20,21]. Furthermore the neural circuitry involved in affective regulation is closely related to the circuitry underlying addictive behaviours [22].

In this context, the relatively frequent co-occurrence of affective disorders and alcohol addiction should also be emphasized. As many as 80% of alcohol addicts display depressive symptoms at some time in their lives, among whom 30% develop full-blown unipolar mood disorder [5]. Moreover, alcohol use disorder is overrepresented in the bipolar population, with a comorbidity rate 29% [23].

The relationship between the structure of affective temperament, affective disorders and alcohol addiction is complex. Temperamental traits may constitute the basis for the development of both addiction and full-blown or sub-threshold affective disorders, and at the same time there may be three possible pathomechanisms of co-occurrence of addiction and mood disorders: (1) mood disorders predisposes to the development of addiction; (2) addiction predisposes to the development of addiction; (3) mood disorders and addiction share a common origin and trajectory [24–28].

Moreover same as affective temperaments and mood disorders, the development and clinical course of alcohol dependence is also associated with 5-HTTLPR. Given the interplay of the serotonin and dopamine systems and its role in novelty seeking and reward, 5-HT regulatory genes have been suggested as possible vulnerability to alcohol dependence [10,29,30].

The structure of affective temperament among alcohol-addicted individuals

Hence, one potential mechanism underlying alcohol use disorder may be the affective temperament profile, which also determines its course and prognosis. Unfortunately, only few studies have examined the relationship between affective temperaments and addictive behaviors.

The most morbid and prodromal temperament regarding behavioral and emotional problems is believed to be the cyclothymic type [31]. Furthermore, studies indicate that it is also a key

factor in the development and maintenance of substance use disorders [32-34].

A pivotal study regarding the structure of affective temperament related to alcohol addiction was conducted in 2009 by Pacini et al. [33]. The study compared the affective temperaments of 94 consecutive patients with alcohol abuse disorders (39 with psychiatric comorbidity and 55 without), with those of 50 healthy volunteers with a similar sociodemographic profile. Although no differences were observed between the two groups on the hyperthymic scale, alcohol abuse group scored significantly higher for the cyclothymic, depressive and irritable temperaments, regardless of the presence of co-occurring psychiatric diagnosis. However, it must be emphasised that although multivariate discriminant analysis allows alcohol abuse cases to be distinguished from controls, based mainly on cyclothymic but also depressive traits, it does not differentiate between patients with alcohol addiction alone and with a dual diagnosis.

Impact of temperamental traits in alcohol dependent patients on the course of disorder

Various models have attempted to explain the significant influence of cyclothymia on alcohol abuse. Pombo et al. [35] propose that cyclothymic temperament has special importance on the clinical expression of alcohol dependence. They emphasize that the related affective instability has a specific temperamental component, which is related to regulating mood through alcohol consumption. Furthermore, they recommend that particular emphasis should be placed on the relationship between cyclothymic features and bipolar disorder.

Numerous studies indicate the existence of a continuum between the cyclothymic dimension of affective temperament and type I and type II bipolar disorder [3,4,36]. It has also been well reported in the literature that bipolar disorder significantly increases the risk of developing alcohol dependence [5,37,38]. Cyclothymic traits could also cohere with the conceptualization of “sensation-seeking” as the main personality characteristic of addiction in general [32]. However, within bipolar patients hyperthymic and irritable temperaments in particular signif-

icantly increased the odds of concomitant alcohol misuse [39].

Above all cyclothymic temperament seems to be a negative predictor for the clinical course of alcohol dependence [40]. Cyclothymic traits remarkably impact the age of onset of alcohol abuse and age of onset of alcohol dependence [41,42]. High scores on the cyclothymic scale are significantly convergent with the Lesch IV subtype of alcoholism [40], which is also associated with a high level of depressive, irritable and anxious temperaments [41]. This subtype of patients with alcohol disorders seem to drink alcohol not only to cope with cyclothymia-induced affective instability, but also against increased levels of depression, anxiety and irritation. It is also indicated that a high level of cyclothymic temperament is connected with clinical expression of Cloninger type II alcoholism phenotype [35].

Research on predicting short-term relapse indicated higher scores on the cyclothymic scale among detoxified male patients with alcohol dependence who later relapsed compared to those with alcohol problems who recovered and remained sober. A cyclothymic temperament predicted relapse in a three-month follow-up [43].

One of the most important predictors of relapse is alcohol craving [44,45]. Research indicates that next to depression and hostility, a cyclothymic temperament is one of the most significant predictors of alcohol craving in sober patients with alcohol dependence [35]. Interestingly among alcohol-dependent patients diagnosed with bipolar affective disorder, alexithymia acts as a mediator between affective temperaments and alcohol craving. Difficulty in identifying feelings mediated the association between anxious temperament and craving, cyclothymic temperament and craving, irritable temperament and craving. A difficulty in communicating feelings to others mediated the association between anxious temperament and craving [46].

An anxious temperament has been linked with an increased likelihood of treatment history for alcohol use disorder, whereas a depressive temperament has been associated with previous suicide attempts among patients [41]. Furthermore, depressive, anxious and irritable temperaments also appear to influence the probability of suicide attempts among people with substance use disorder in general [47].

As alcohol addiction is overrepresented in the bipolar population, it is noteworthy that irritable and hyperthymic temperaments are independent predictors of alcohol misuse among patients diagnosed with bipolar affective disorder [48], while anxious temperament is an independent protective factor against harmful drinking [49]. In this context, the role of the anxious temperament can be explained by its positive correlation with harm avoidance and negative correlation with novelty seeking [11], since high novelty seeking is connected with hazardous drinking and high harm avoidance with abstinence [50].

The structure of affective temperament also plays a role in the occurrence of mixed addiction. An irritable temperament seems to be a significant risk factor for past or present history of drug use disorders in patients diagnosed with alcohol addiction, and an anxious temperament for history of alcohol use disorders in patients with opiate addiction. Conversely, a hyperthymic temperament seems to be a significant protective factor [22].

CONCLUSIONS

- (1) The profile of affective temperaments is a significant element of the etiology of alcohol use disorder as it has been proposed that alcohol consumption can be accounted for by a combination of overcoming negative affective states and possibly enhancing positive ones [13,15, 24–27,30–33]
- (2) The cyclothymic temperament in particular seems to be a key factor in the development and maintenance of alcohol use disorders, affecting the clinical course of addiction to a greater extent than other types of affective temperament.
- (3) The affective temperament profile of an individual may provide an insight in to the likelihood of alcohol use disorders and may be a prognostic factor regarding the risk of craving and relapse, suicide, treatment motivation and the co-occurrence of drug dependence.

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