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#### Research report

# Emotional traits and affective temperaments in alcohol users, abusers and dependents in a national sample



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#### ABSTRACT

*Background:* It is unclear how temperament is related to alcohol-related behavior in large population studies. We have used the Affective and Emotional Composite Temperament Scale (AFECTS) model to evaluate how emotional traits and affective temperaments are associated with alcohol use, abuse, and dependence in the general population.

*Methods:* Data from 10,603 subjects (mean age  $= 28.0 \pm 7.8$  years, 70.3% females) was collected anonymously by the Internet in Brazil using the AFECTS model and the Alcohol, Smoking and Substance Involvement Screening Test (ASSIST). Alcohol use was stratified into control, low use, abuse, and dependence groups.

*Results:* The analysis of dimensional traits showed that Volition and Coping were lower, and Sensitivity was higher, in the abuse and dependence groups, with no differences between the Control and the Low Use groups. Alcohol consumption was also associated with lower Control, Stability, and Caution, and higher with Anger, Anxiety, and Desire, with significant differences between all groups. Regarding affective temperament types, alcohol abuse and dependence were associated with euphoric and cyclothymic temperaments in both genders, which was mirrored by a lower frequency of both euthymic and hyperthymic types. Only hyperthymics were overrepresented in the Control group for both genders. *Limitations:* Data was collected by Internet only.

*Conclusions:* A global dysfunction of emotional traits and a predominance of cyclothymic and euphoric temperaments were associated with alcohol-related behavior. Prevention and treatment strategies may be developed more effectively if these traits are taken into account.

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#### 1. Introduction

Personality traits are important risk factors in the etiological theories of alcohol-related disorders (Cloninger, 1987; Zucker and Gomberg, 1986). Behavioral disinhibition and negative emotions are associated with an increased risk of abuse and dependence for this kind of a substance (McGue et al., 1999; Elkins et al., 2006; Hicks et al., 2012). Disinhibition includes features such as sensation seeking, rebelliousness and impulsivity. Negative emotionality is the tendency to experience psychological distress, such as sadness, fear, worry, anger, feelings of isolation, interpersonal distrust, and hostility (Hicks et al., 2012). However, disinhibition and negative emotionality are general and heterogeneous constructs, but it is unclear how specific traits are related to alcohol use, abuse, and addiction, in large population studies. Such knowledge may be useful in the development

\* Corresponding author at: Faculdade de Biociências-PUCRS, Av. Ipiranga, 6681-Pd12A, Porto Alegre, RS 90619-900, Brazil. Fax: +55 51 33203612. *E-mail address*: drlara@pucrs.br (D.R. Lara). of effective strategies for the treatment and prevention of alcoholrelated disorders.

In an attempt to integrate dimensional and categorical models for trait assessment, we developed the Affective and Emotional Composite Temperament (AFECT) model (Lara et al., 2006, 2012a). The dimensional approach consists of specific traits reflecting relevant neurobehavioral systems, with the main functions being Activation, Inhibition, Sensitivity, Coping and Control. This allows for a detailed and discriminative evaluation of emotional and cognitive features. Activation is represented by Volition, Desire and Anger. Inhibition relates to Fear and Caution, which promote avoidance and protection. Sensitivity corresponds to vulnerability in handling interpersonal conflicts and stressful events. Coping is the ability to address and solve problematical situations of life with a learning that is enforced through and by experience. Control involves executive functions, such as the monitoring of the environment by attention and behavioral adaptation, and by discipline and planning. Avoidant behavior and stability are traits recently included in the model (De Carvalho et al., 2013). The interaction between these independent emotional traits is associated with common behavioral and mood patterns, conceived as affective temperaments, which are classified into 12 categories: depressive,

avoidant (formerly anxious), apathetic (introverted types), cyclothymic, dysphoric, volatile (unstable types), obsessive, euthymic, hyperthymic (stable types), irritable, disinhibited, and euphoric (externalized types) (Lara et al., 2012a). This global perspective facilitates a clinical perception and communication among professionals. For the evaluation of emotional traits and affective temperaments, we developed and validated the Affective and Emotional Composite Temperament Scale (AFECTS) model, a self reporting instrument (Lara et al., 2012a).

Using the AFECTS model, we recently characterized how emotional traits and affective temperaments are associated with cocaine experimentation, abuse, and addiction, in the general population. The traits of Caution, Control and Coping were negatively associated, whereas Anger and Desire were positively associated with the use of this kind of a substance. For affective temperaments, a greater cocaine use was related to a lower proportion of stable types (i.e. obsessive, euthymic and hyperthymic types), together with the anxious type, and to a higher proportion of cyclothymic and euphoric temperaments in both sexes (Fuscaldo et al., 2013).

Others studies have evaluated the association between affective temperaments and alcohol-related disorders using the Temperament Evaluation of Memphis, Pisa, Paris and San Diego (TEMPS) Autoquestionnaire. A cohort study by Pacini et al. (2009) showed that Alcoholics, with or without psychiatric comorbidity, had higher scores of depressive, cyclothymic and irritable temperaments when compared to controls. In addition, in a retrospective study by Vyssoki et al. (2011), it was found that only the cyclothymic temperament was associated with a lower age of abuse, onset by a greater degree of alcohol dependence.

The Brazilian Internet Study on Temperament and Psychopathology (BRAINSTEP) (Lara et al., 2012b) is a large scale project that takes advantage of the Internet in order to collect behavior data anonymously. Data collection by computer can increase the validity of the responses that include moral, intimate and personal issues, especially when compared to anonymous pen and paper methods (Turner et al., 1998), face-to-face issues (Gosling et al., 2004), and telephone interviews (Cuijpers et al., 2008). Web-based surveys can motivate participants to instigate personal feedback and to insure the quality of the data with validity checks (Edwards et al., 2009). Thus, data collection on the Internet can be seen as the 'gold standard', especially for those issues involving social desirability within population studies.

Our aim was to evaluate how emotional traits and affective temperaments are associated with alcohol use, abuse, and dependence in the general population.

#### 2. Methods

#### 2.1. Design

The sample was composed of subjects from the general population, above the age of 18, who spontaneously responded

to the AFECTS model, the Alcohol, Smoking and Substance Involvement Screening Test (ASSIST) and to questions on demographic variables through a website survey (www.temperamento.com.br). This was after their agreement with the consent terms elaborated to fulfill the requirements of the Brazilian National Health Council. Participants were volunteers and could cancel their participation at any time without reason. The study was approved by the Institutional Review Board of Hospital São Lucas at Pontificia Universidade Católica do Rio Grande do Sul.

The data presented in this research belongs to an earlier study on a large sample called BRAINSTEP. After answering the instruments, volunteers received feedback about their temperament profile, and their chances of having a psychiatric disorder. With the aim of increasing data reliability issues, attentional control items were distributed throughout the system.

#### 2.2. Instruments

### 2.2.1. Affective and Emotional Composite Temperament Scale (AFECTS)

The scale for the assessment of temperament is composed of emotional and affective sections.

- Emotional Section: This is a bipolar scale with 7 points and 60 items, divided into 10 dimensions. The dimensions are named Volition (1–8), Desire (9–12), Anger (13–20), Fear (21–24), Caution (25–28), Sensitivity (29–36), Coping (37–44), Control (45–52), and the recently included Anxiety (53–56) and Stability (57–60) dimensions. The total score for each dimension is the sum of its items.
- (2). Affective Section: For a quantitative evaluation of affective temperament, brief descriptions of 12 affective temperaments (depressive, avoidant, apathetic, cyclothymic, dysphoric, volatile, obsessive, euthymic, hyperthymic, irritable, disinhibited, and euphoric) are presented with a Likert scale of 5 items from "nothing like me" (1) to "exactly like me" (5). After these 12 descriptions, the subject had to choose which of these profiles better represented his or her temperament (Table 1).

### 2.2.2. Alcohol, Smoking, and Substance Involvement Screening Test (ASSIST)

The ASSIST (Henrique et al., 2004) consisted of 8 questions in order to evaluate the usage pattern of psychoactive substances (alcohol, tobacco, cocaine, marijuana, stimulants, sedatives, inhalants, hallucinogens and opiates) in terms of experimentation (question 1), frequency, drug-use related problems (financial, social, legal and health issues), concern of others regarding the individual's pattern of use, unsuccessful attempts to stop or reduce the drug use, craving, and the use of injectable drugs (question 8). The first question screens for experimentation with each drug,

#### Table 1

Types of affective temperaments.

Internalized types	Unstable types	Stable types	Externalized types
<b>Depressive:</b> tendency towards melancholy and sadness; tends to put oneself down; quiet.	<b>Cyclothymic:</b> unpredictable and unstable mood; periods of high energy and enthusiasm alternate with sluggishness and loss of interest.	<b>Obsessive:</b> dedicated, demanding, detail-oriented, inflexible and perfectionist; needs to be in control of things.	<b>Irritable:</b> very frank, direct and determined, but also angry, explosive and suspicious.
Avoidant: worrier, careful; afraid that bad things will happen; avoids risky situations; always alert and vigilant.	<b>Dysphoric:</b> strong tendency to feel tense and uneasy, anxious and irritated.	<b>Euthymic:</b> balanced and predictable mood, which changes only when there is a clear reason.	<b>Disinhibited:</b> restless, active, spontaneous and distracted; often rushes and acts carelessly; leaves things to the last minute.
Apathetic: has little initiative; often fails to finish what has started; tends to be passive and slow.	<b>Volatile:</b> restless, disorganized and easily distracted; quickly loses interest and often fails to conclude tasks.	<b>Hyperthymic:</b> always in good spirits, very confident; loves novelties; obstinate and with a tendency to leadership.	<b>Euphoric:</b> expansive, fast, talkative and intense; has many ideas and is easily distracted; hasty; takes risks when overconfident or excited.

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