Association between Morningness/Eveningness, addiction severity and psychiatric disorders among individuals with addictions

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Introduction

- Chronotype or morningness-eveningness preference in humans
  - Intrinsic biological characteristic
  - Defined by sleep-wake cycle
    - Variation of the attention level between morning and evening
  - Chronotype is a continuum
    - Two extremes: Morning-Type (MT) and Evening-Type (ET) *(Natale and Cigogna, 2012)*
- Clinical association between chronotype and substance use
  - Evening-type (ET) subjects
    - Use more sedative and stimulating substances *(Prat and Adan, 2011)*
      - « Social jetlag » hypothesis to adjust their degree of daytime activation *(Wittmann et al.,2010)*
    - Associated with eating behavior and compulsive internet use *(Natale et al.,2008; Lin and Gau, 2013)*
- Neurobiological association between chronotype and addiction
  - Circadian clock genes regulates dopaminergic activity in the brain reward system *(McClung,2007)*

Objectives

- To describe chronotype in a sample of subjects with at least one substance or non-substance addictive disorder
- To compare socio-demographic characteristics, addiction severity and psychiatric comorbidities according to chronotype

Methods

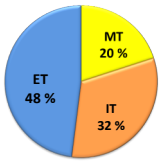
- Sample
  - Participants enrolled in the Aquitaine Addiction Cohort
  - Met diagnosis for at least one addiction (with or without substance)
  - Seeking treatment in an outpatient addiction clinic
- Assessment
  - Chronotype: Morningness-Eveningness Questionnaire (MEQ) *(Horne and Ostberg, 1976; Taillard et al., 2004)*
    - Self-questionnaire, 19 questions
    - Exploring: life preference in terms of hours for activity, sleep/wake cycle, meals, tiredness and sleepiness
  - modified Addiction Severity Index (mASI) *(Denis et al., 2015)*
    - History of substance use, tobacco use, gambling use
    - Severity of the addiction
  - Mini International Neuropsychiatric interview (MINI) *(Sheehan et al., 1998)*
    - Diagnosis of substance use disorder, gambling disorder
    - Other Axis I diagnoses and Antisocial personality disorder

Results – Sample characteristics

- N= 333 participants
  - Males 63%
  - Age: Mean= 39.8 y.o. (SD=11.4)
  - Met DSM criteria for addictive disorder
    - Tobacco 70%
    - Alcohol 46%
    - Cannabis 27%
    - Opiates 13%
    - Cocaine/Amphet. 10%
    - Benzos. 8%
    - Non-substance addictive disorder 17%
      - Gambling 13%
      - Eating disorders 4%
  - Psychiatric comorbidities
    - At least one mood disorder 30%
    - At least one anxiety disorder 44%
    - ADHD 5%
    - Antisocial Personality Disorder 9%

Results – Chronotype

- Chronotype
  - Mainly Evening Type



- Following analyses on ET and MT only
  - N= 172
  - 58.7% males, 41.8 y.o. (SD=11.9)

Results – Factors associated with chronotype (1)

- Chronotype was not linked to
  - Gender
  - Age
  - Years of substance use/ behavior
  - Severity of the addiction
  - Nb. of addictive disorders
  - Anxiety disorder
  - ADHD

Results – Factors associated with chronotype (2)

- Evening-type individuals were more likely to meet
  - Non-substance addictive disorder (i.e. gambling, eating disorders) (aOR=4.71, 95%CI 1.32-18.6, p=0.02)
  - Poly-addiction (besides tobacco) (aOR=6.10, 95%CI 1.59-26.0, p=0.01)
  - At least one mood disorder (aOR=2.58, 95%CI 1.14-6.20, p=0.02)
- Evening-type individuals were less likely to meet
  - Antisocial personality disorder (aOR=0.19, 95%CI 0.04-0.75, p=0.02)

Results – Factors associated with chronotype (3)

- When analyzing MEQ score as a continuous variable
  - Low MEQ score (i.e. ET) was associated with
    - Mood disorder (β=-1.6, p=0.03)
    - Non-substance addictive disorder (i.e. gambling, eating disorders) (β=-3.2, p=0.04)
  - High MEQ score (i.e. MT) was associated with
    - Antisocial personality disorder (β=2.7, p=0.02)

Discussion

- High prevalence of ET in individuals with addictive disorders
  - Compared to general population of same age (Broms et al., 2014; Taillard et al., 2004)
- Chronotype was associated with specific addiction pattern
  - ET was associated with poly-addiction
    - Could reflect a more severe addiction
  - ET was associated with non-substance addictive disorders
  - ET was not associated with more severe addiction
    - Severity of the addiction high in our sample
- Association between chronotype and psychiatric disorders
  - Association between the ET and Mood disorders
- Further studies are needed
  - To compare with a control group of healthy subjects
  - To compare with samples with less severe substance use disorder and less psychiatric comorbidities