



Psychotrauma et trouble de l'usage, *ce que nous disent la littérature et la pratique*

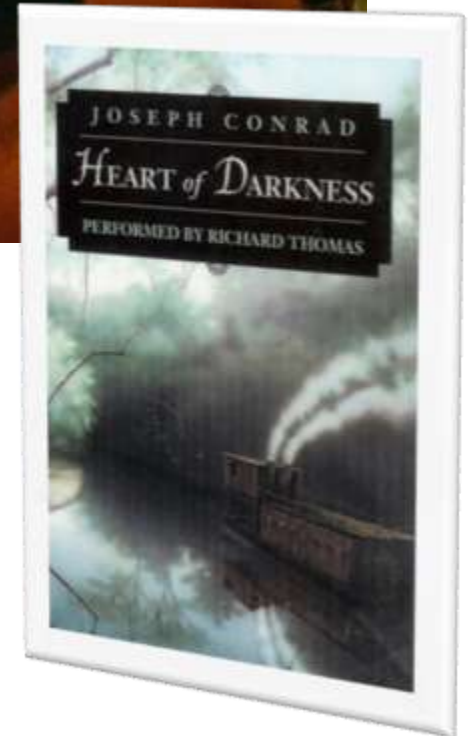
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Apocalypse Now Redux 2001



Questions

- Cases and clinical features
- Specify the nature of the diseases: definitions
- what are the data from the epidemiology?
- What relationship is there between PTSD and Substance Use Disorders
 - which disorder most frequently precipitates the other?
- Specify the nature of the diseases: pathophysiology, Self Medication Hypothesis
- *what is the influence of the environment on this comorbidity?*
- what are the therapeutic approaches?

Cases and clinical features

- Clara, 26 years old
- After hurricane carraibes
- Frequent drinking and cocaine addiction
- SUD increased following hurricane
- Victim of rape after having found refuge in a squat: PTSD
- Admitted to emergency: cocaine + Alcohol + suicidal behavior
- History of sexual abuse in childhood: PTSD



« forget this image »

« no longer thinking »

Cases and clinical features

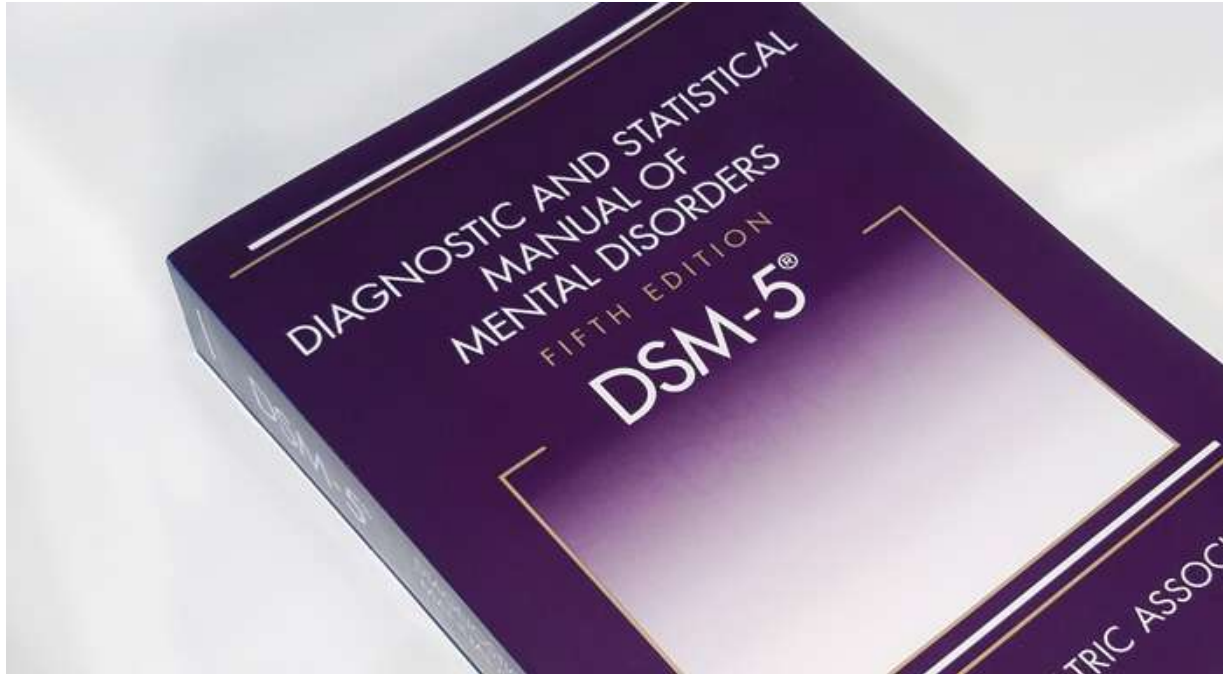
- Teddy
- 34 years old
- Frequent cocaine use
- Bataclan: meeting trauma and addiction: PTSD

« escape from chaos »

« extinguish my body »

- Laura
- 32 years old
- History of sexual abuse in childhood: PTSD
- Opiates use disorders since the end of his adolescence

Diseases



Posttraumatic Stress Disorder

Diagnostic Criteria

309.81 (F43.10)

Posttraumatic Stress Disorder

Note: The following criteria apply to adults, adolescents, and children older than 6 years. For children 6 years and younger, see corresponding criteria below.

A. Exposure to actual or threatened death, serious injury, or sexual violence in one (or more) of the following ways:

1. Directly experiencing the traumatic event(s).
2. Witnessing, in person, the event(s) as it occurred to others.
3. Learning that the traumatic event(s) occurred to a close family member or close friend. In cases of actual or threatened death of a family member or friend, the event(s) must have been violent or accidental.
4. Experiencing repeated or extreme exposure to aversive details of the traumatic event(s) (e.g., first responders collecting human remains; police officers repeatedly exposed to details of child abuse).

Note: Criterion A4 does not apply to exposure through electronic media, television, movies, or pictures, unless this exposure is work related.

B. Presence of one (or more) of the following intrusion symptoms associated with the traumatic event(s), beginning after the traumatic event(s) occurred:

C. Persistent avoidance of stimuli associated with the traumatic event(s), beginning after the traumatic event(s) occurred, as evidenced by one or both of the following:

D. Negative alterations in cognitions and mood associated with the traumatic event(s), beginning or worsening after the traumatic event(s) occurred, as evidenced by two (or more) of the following:

E. Marked alterations in arousal and reactivity associated with the traumatic event(s), beginning or worsening after the traumatic event(s) occurred, as evidenced by two (or more) of the following:

Substance Use Disorder Proposed Revision Rationale
Severity DSM-IV Substance Use Disorder

A. A maladaptive pattern of substance use leading to clinically significant impairment or distress, as manifested by 2 (or more) of the following, occurring within a 12-month period:

1. recurrent substance use resulting in a failure to fulfill major role obligations at work, school, or home

2. recurrent substance use in situations in which it is physically hazardous

3. continued substance use despite having persistent or recurrent social or interpersonal problems caused or exacerbated by the effects of the substance

4. tolerance, as defined by either of the following:

5. withdrawal, as manifested by either of the following:

6. the substance is often taken in larger amounts or over a longer period than was intended

7. there is a persistent desire or unsuccessful efforts to cut down or control substance use

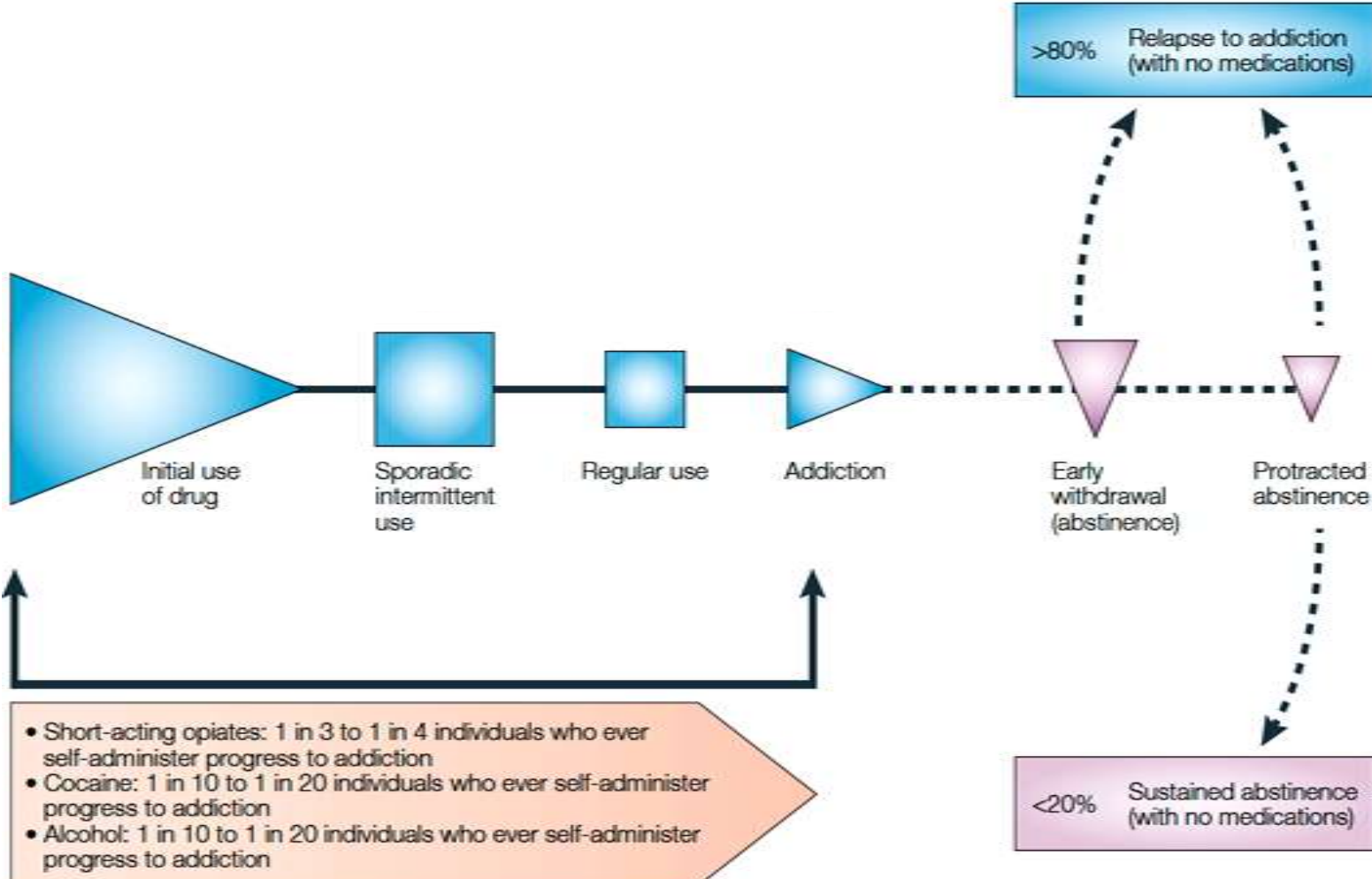
8. a great deal of time is spent in activities necessary to obtain the substance, use the substance, or recover from its effects

9. important social, occupational, or recreational activities are given up or reduced because of substance use

10. the substance use is continued despite knowledge of having a persistent or recurrent physical or psychological problem that is likely to have been caused or exacerbated by the substance

11. Craving or a strong desire or urge to use a specific substance

Addiction is not use

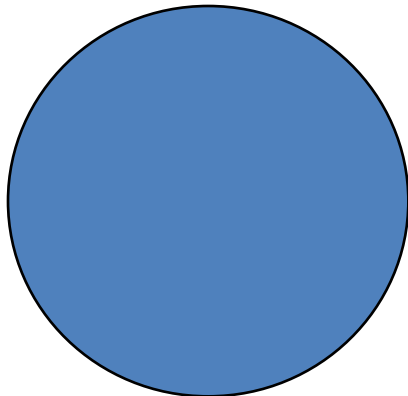
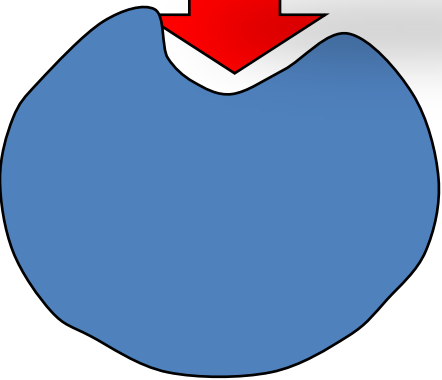


Stress is not trauma that is not PTSD

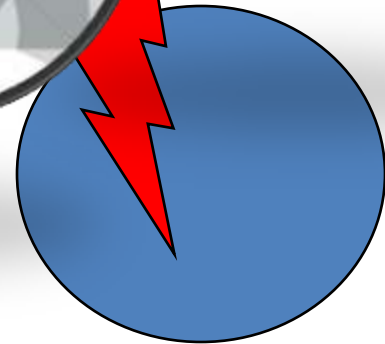
stress



Reaction to the environment

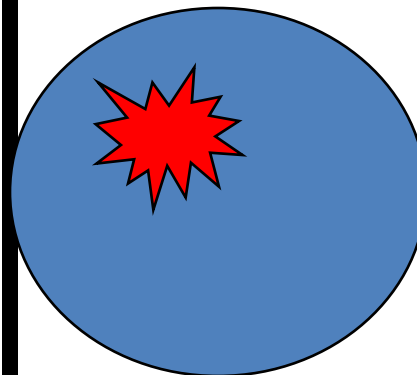


trauma



PTSD

Permanent inscription in the heart of the brain of an image (thoughts and emotions)



Epidemiological aspects: a non-fortuitous link ?



- Multiple studies have shown a 3- to 5-fold increase in the development of substance abuse among PTSD patients, leading to substance abuse comorbidity in nearly half of PTSD patients (Breslau et al, 2003) (Addiction pour plus de la moitié des PTSD)
- Approximately 35% to 50% of people in addiction treatment programs have a lifetime diagnosis of posttraumatic stress disorder (PTSD), and 25% to 42% have a current diagnosis (Back et al., 2000)

- **Stress, traumatic "experience", PTSD are risk factors for developing drug use and addiction** (*stress, trauma, TSPT sont des facteurs de risque de développer un usage de drogues et une addiction*)
- **Drug-related consequences (disinhibition, loss of control) lead to more frequent traumatogenic exposures** (*Les problèmes liés aux drogues (désinhibition, perte de contrôle) conduisent à de plus fréquentes expositions traumatogènes*)
- **Personality traits and psychological factors favorable to the development of addictions (search for novelty and sensation) promote exposure to trauma** (*Les traits de personnalités et les facteurs psychologiques favorables aux addictions (recherche de nouveauté et de sensation) favorisent l'exposition aux traumatismes*)

The presence of a SUD increases risk of a co occurrence of a PTSD

	Tobacco	alcohol	cannabis	héroïn	cocaine	Authors
PTSD Men		X 2.06	X 2.97			<i>NCS, Kessler et al 1995</i>
		X 6.6	X 7.2			<i>Creamer et al australie, 2001</i>
				X 3.62		<i>ECA, Cottler et al, 1992</i>
PTSD women		X2.48	X4.46			<i>NCS, Kessler et al 1995</i>
		X4.5	X12.4			<i>Creamer et al australie, 2001</i>
PTSD teenagers		X5				<i>(Clark, 1997)</i>
Trauma exposure				X 5.06		<i>ECA, Cottler et al, 1992</i>

Most retrospectives studies

Comorbidity alcohol PTSD : 20 to 40% (Ouimette et Brown,2003)

The presence of a trauma or PTSD increases risk of a co occurrence of a substance-related disorders

	Trauma	PTSD	Authors
Nicotine	The presence of PTSD increases the risk of tobacco consumption (X1.83) but not trauma without PTSD		Bresleau et al, 2003
Illicit substances	idem PTSD >> X3.53		
Alcohol		24% (10600 patients)	Mills et al 2006
Alcohol		X3 (800 mères, 13% PTSD)	Breslau et al, 1997

Primacy PTSD / Alcohol: 60%

Primacy of psychotrauma /addiction: 60 to 80% (*Eraldi Gakiere, Boudoukha 2010*)

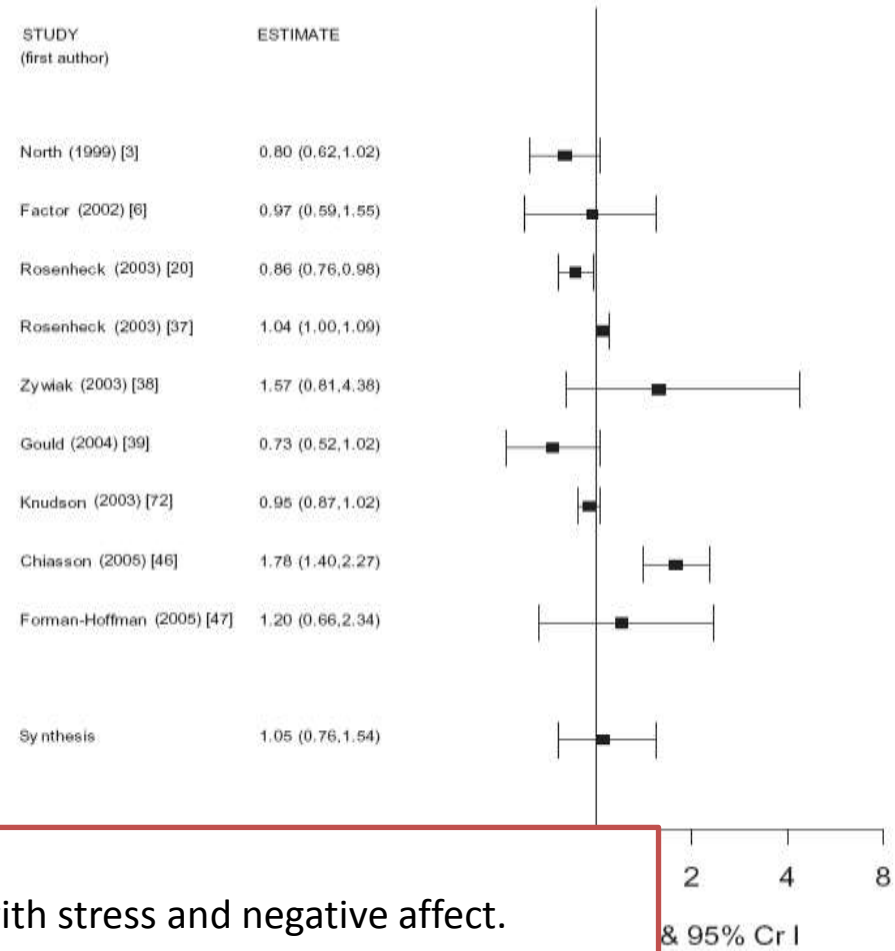
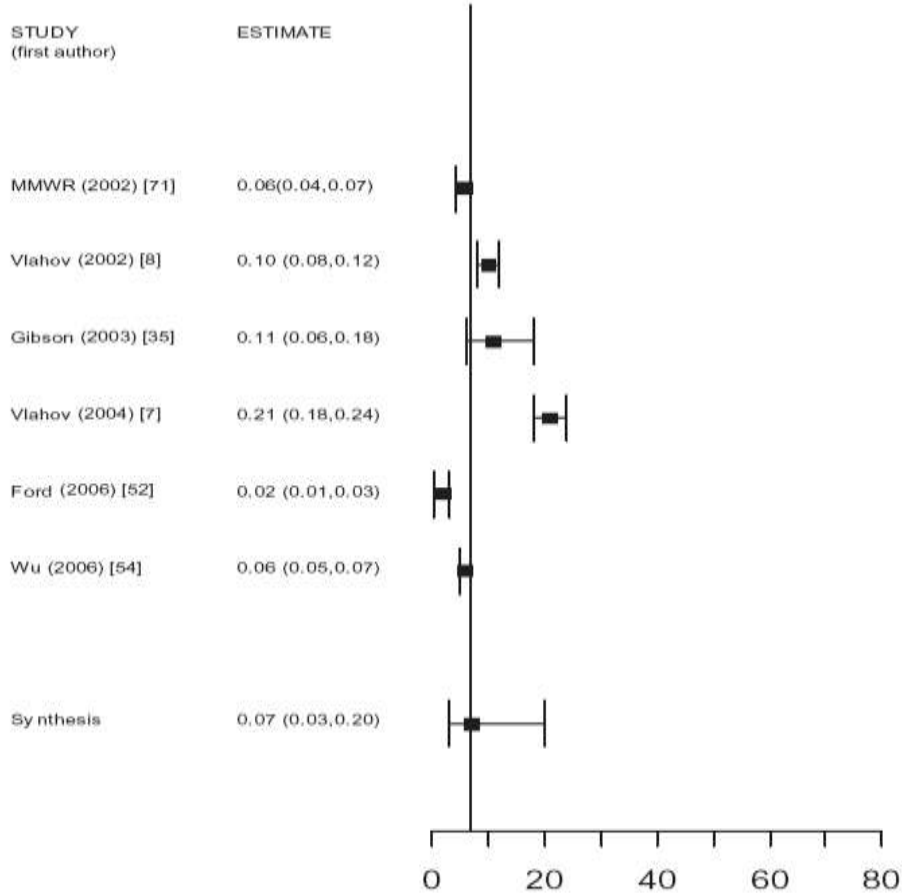
Substance use and misuse in the aftermath of terrorism. A Bayesian meta-analysis

Charles DiMaggio^{1,2}, Sandro Galea^{1,3} & Guohua Li^{1,2}

Department of Epidemiology, Columbia University, Mailman School of Public Health, New York, NY, USA,¹ Department of Anesthesiology, Columbia University, College of Physicians and Surgeons, New York, NY, USA² and Center for Social Epidemiology and Population Health, University of Michigan, Ann Arbor MI, USA³

- Review (*Revue de la littérature*)
 - Literature paper
 - 31 studies
 - Population confronted with terrorist attacks of any kind
 - The majority of studies (70%) follow September 11

- 7.3% of the study population showed an increase in alcohol consumption within two years of the trauma (*7.3% de la population étudiée montre une augmentation de la consommation d'alcool dans les deux ans suivant le traumatisme*)
- Probability of 20% for the prevalence of alcohol addiction in these populations to be 15% (*Probabilité de 20% pour que la prévalence de l'addiction à l'alcool dans ces population soit de 15%*)
- 7% increase in tobacco (*Augmentation de 7% consommation de tabac*)
- Consumption Increased use of illicit drugs is 16.3% (*Augmentation de la **consommation de drogues illicites** est de 16.3%*)



People who experience major trauma

- 1) use substances to relax and cope with stress and negative affect.
- 2) may suffer exacerbated withdrawal symptoms, particularly irritability or nervousness
- 3) may well use drugs in an attempt to self-medicate symptoms
- 4) substance use could exacerbate symptoms, interfering with the resolution of the traumatic experience and prolonging symptoms following the disaster.

Nicotine

Alcohol



Violent offending by UK military personnel deployed to Iraq and Afghanistan: a data linkage cohort study

Deirdre MacManus, Kimberlie Dean, Margaret Jones, Roberto J Rona, Neil Greenberg, Lisa Hull, Tom Fahy, Simon Wessely, Nicola T Fear

	No violent offending	Violent offending	Hazard ratio (95% CI)	p value	Adjusted hazard ratio* (95% CI)	p value
Full sample	7998 (96.5%)	282 (3.5%)	-	-	-	-
Alcohol misuse						
No	6613 (83.8%)	155 (55.6%)	1.00	..	1.00	..
Yes	1243 (16.2%)	120 (44.4%)	3.86 (2.94-5.07)	<0.0001	2.16 (1.62-2.90)	<0.0001
Symptoms of post-traumatic stress disorder						
None (0-39)	7256 (92.1%)	221 (79.6%)	1.0	..	1.0	..
Subclinical (40-49)	326 (4.1%)	27 (10.5%)	2.74 (1.73-4.32)	<0.0001	1.64 (1.02-2.54)	0.042
Clinical (>49)	319 (3.8%)	25 (11.0%)	2.95 (1.83-4.76)	<0.0001	2.20 (1.36-3.55)	0.001

– 13 856 soldiers
 – Alcohol abuse and the presence of PTSD are the main risk factors for developing violent behavior

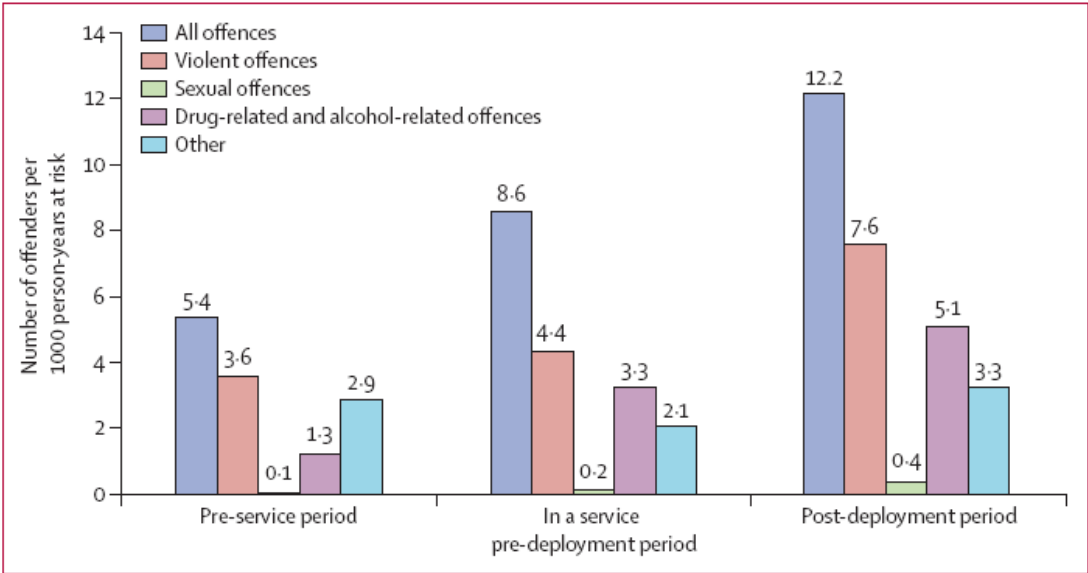


Figure 2: Offending by deployed participants during the pre-military, in-service pre-deployment, and post-deployment periods

what we learned about studies

(Fidelle 2009, Zillhardt 1999)

- **General populations studies**

- **Subjects with PTSD have a significant risk of developing a misuse of substances, mainly alcohol** *(Les sujets présentant un PTSD ont un risque significatif de développer un mésusage de SPA, essentiellement d'alcool)*
- **Risk is greater for men** *(Ce risque est plus important chez les hommes)*
- **Contrasting results** with regard to the risk of exposure to a potentially traumatic event in subjects with substances misuse. *(Résultats contradictoires en ce qui concerne le risque d'exposition à un événement potentiellement traumatique chez des sujets ayant un mésusage de SPA)*
- **Co-occurrence aggravates both pathologies** *(La co-occurrence aggrave les deux pathologies).*



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Review article

Co-occurring mental and substance abuse disorders: A review on the potential predictors and clinical outcomes

Pablo Najt ^{a,*}, Paolo Fusar-Poli ^b, Paolo Brambilla ^{c,d}

18 studies: predictors of outcome of co occurring disorders SUD and Mental Disorders(2010)

Table 2
Factors influencing the course of COD.

Factors		Augmented	Lesser	No differences
Gender differences	Males negative outcomes	4 studies	–	–
Age onset	Earlier in BD	2 studies	–	–
Age onset	Earlier in MDD	1 study	–	–
PTSD effect on COD	More comorbidity	3 studies	–	–
Temporal order	Persistent alcohol symptoms in Mood First diagnosis	5 studies	–	1 study

Notes: Mood = mood disorders; MDD = major depressive disorder; PTSD = post-traumatic stress disorder; First = temporally prior onset; BD = bipolar disorder.

Men, Young

PTSD **before** SUD more frequent than SUD before PTSD

PTSD + SUD → Poor outcome

- **Target populations studies (chez les usagers de drogues)**
 - **The misuse of SPA facilitates exposure to a potentially traumatic event (risk taking, chaotic life, etc.) and subsequently the development of PTSD.** *Le mésusage de SPA facilite l'exposition à un événement potentiellement traumatique (prise de risque, vie chaotique... et par la suite le développement d'un PTSD).*
 - **Girls are more likely to develop PTSD because of higher rates of rape.** *(Les filles développent plus souvent un PTSD du fait d'une plus grande fréquence de viols.)*
 - **Early dependence alters the learning of coping strategies in the face of stress.** *(Une dépendance précoce altère l'apprentissage de stratégies de « coping » face à une situation de stress)*
 - **The misuse of illicit substances seems to be more correlated with the development of PTSD than alcohol dependence.** *(Le mésusage de SPA illicites semble davantage corrélé au développement d'un PTSD que ne l'est l'alcoolodépendance.)*
 - **PTSD+SUD: Craving,** reviviscence, hyperreactivity

Addiction/ incentive sensitization (*Processus de sensibilisation*)

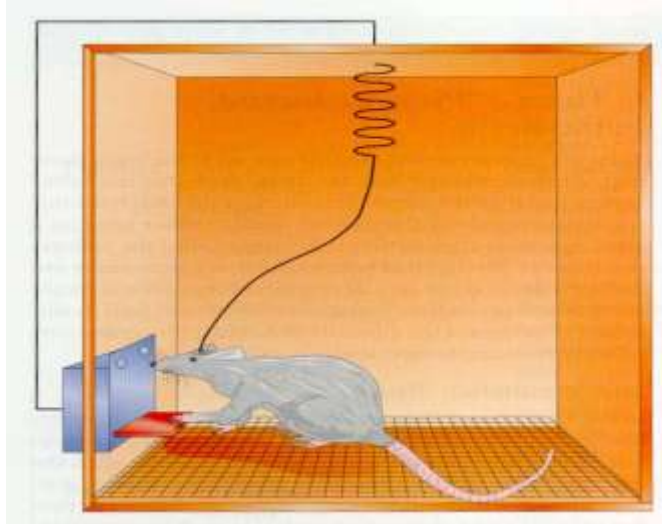


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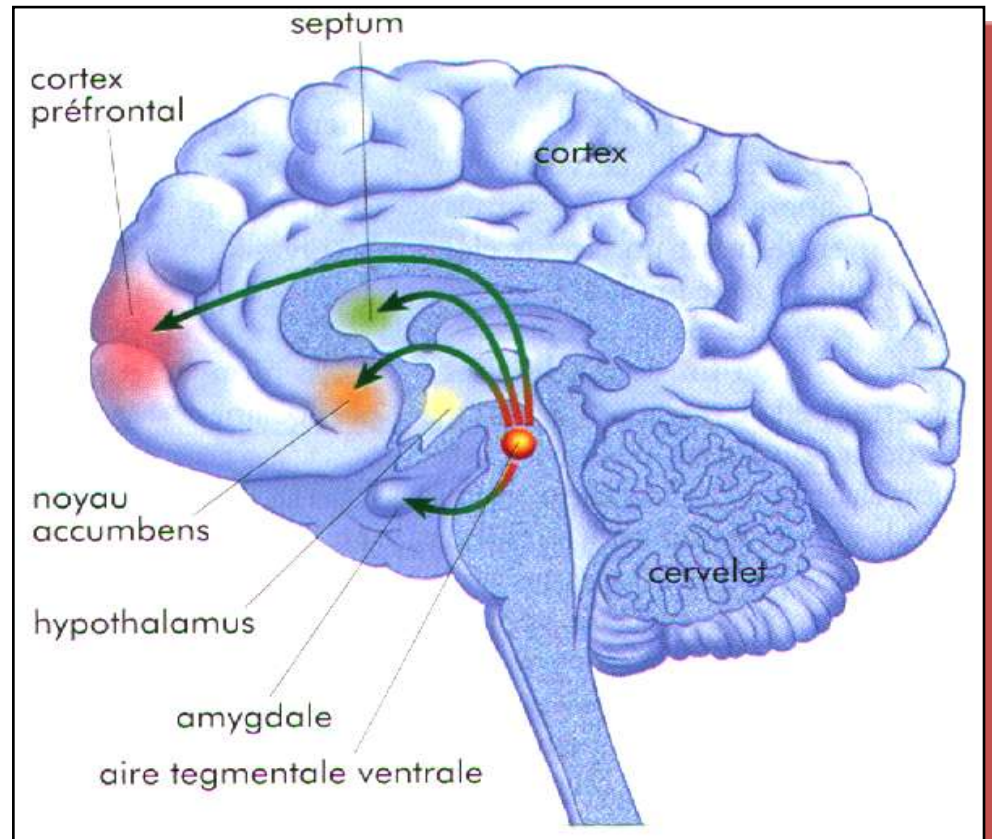
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Current Opinion in
Neurobiology

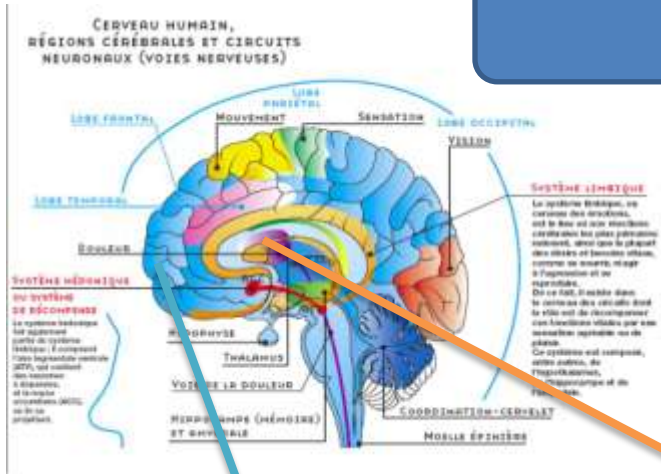
Addiction: failure of control over maladaptive incentive habits
David Belin^{1,2}, Aude Belin-Rauscent^{1,2}, Jennifer E Murray^{2,3} and
Barry J Everitt^{2,3}



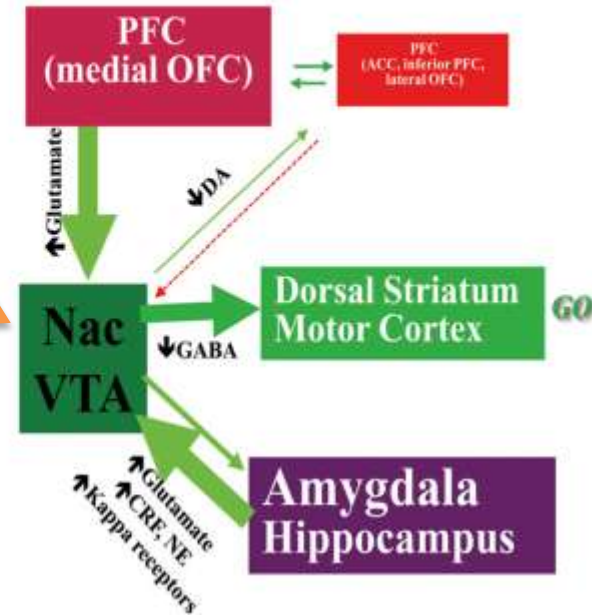
Addiction is brain disease
(Science 1997)



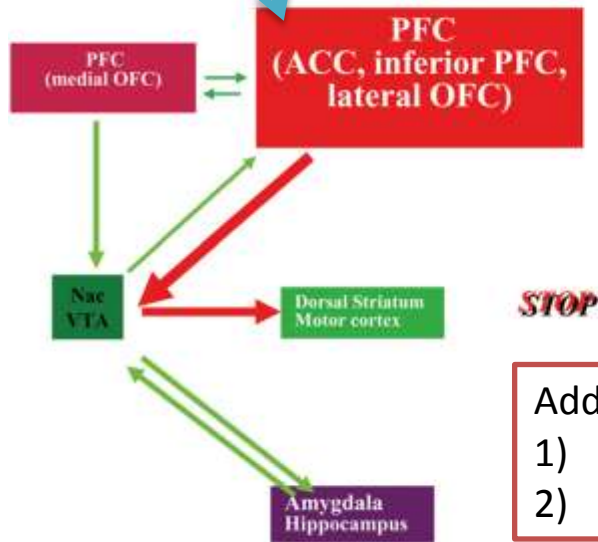
Liking → wanting → must do



B Addicted Brain



A Non-Addicted Brain



Addiction

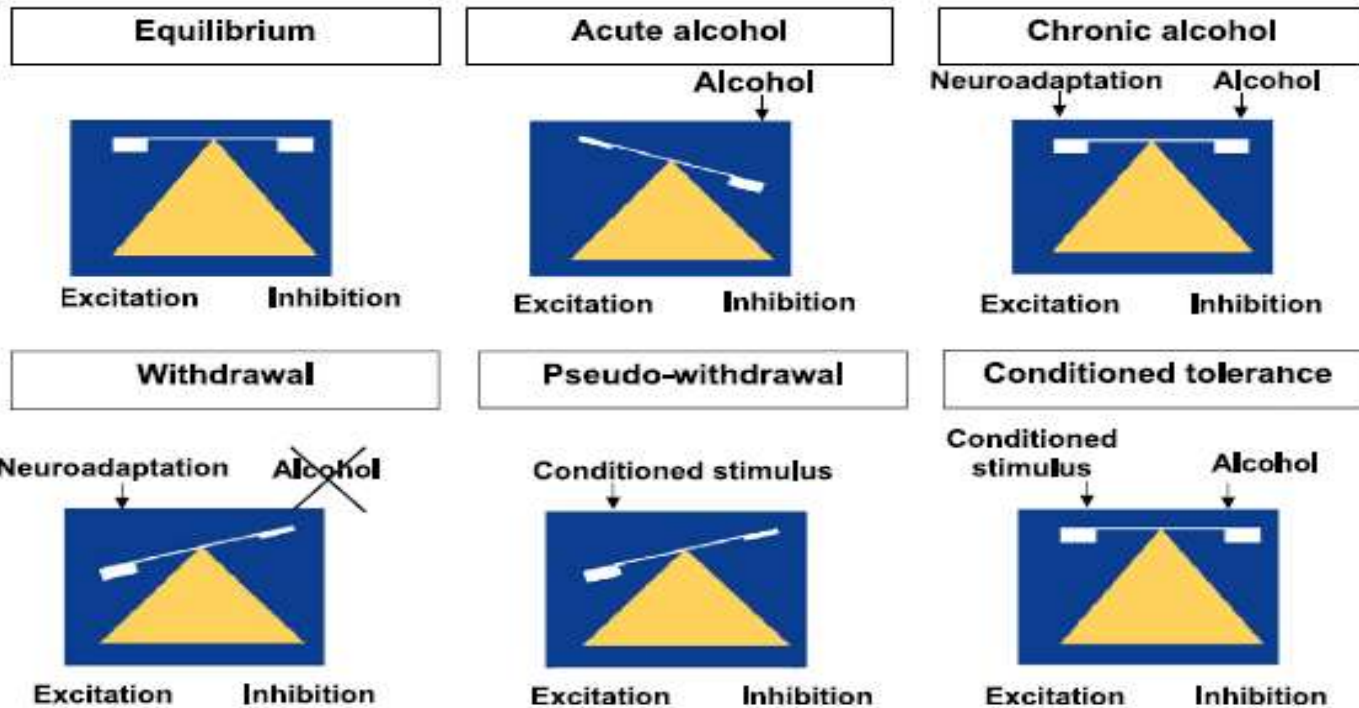
- 1) Hypersensitisation of striatum structures
- 2) Loss of effectiveness of cortical controllers



Imbalance between neuroexcitatory and neuroinhibitory amino acids causes craving for ethanol

Philippe De Witte

↗ GABA ↘ Glutamate Balance

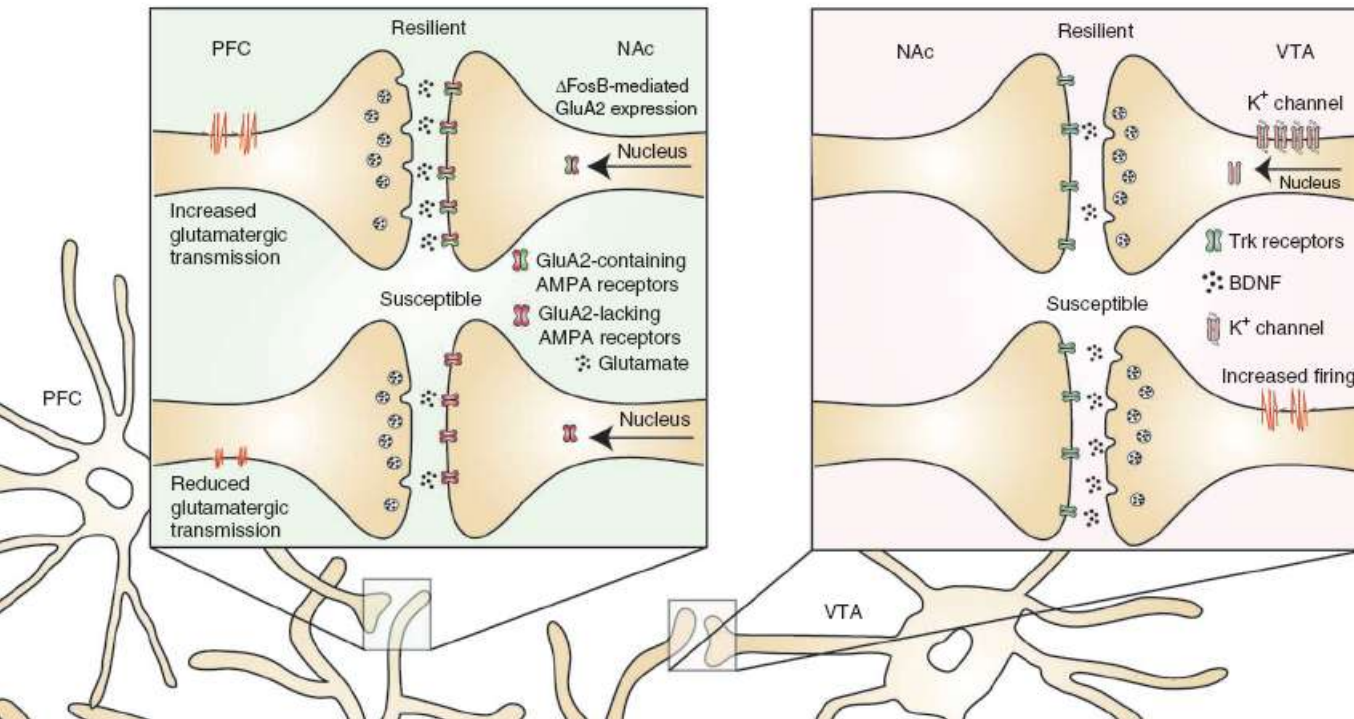


Withdrawal: sudden break in equilibrium (Allostasia)

Neurobiology of resilience

2012

Scott J Russo¹, James W Murrough^{1,2}, Ming-Hu Han^{1,3}, Dennis S Charney¹⁻³ & Eric J Nestler¹⁻³



Resilience implies stabilization of ATV / Nac dopaminergic hyperactivity

Increased PFC activity

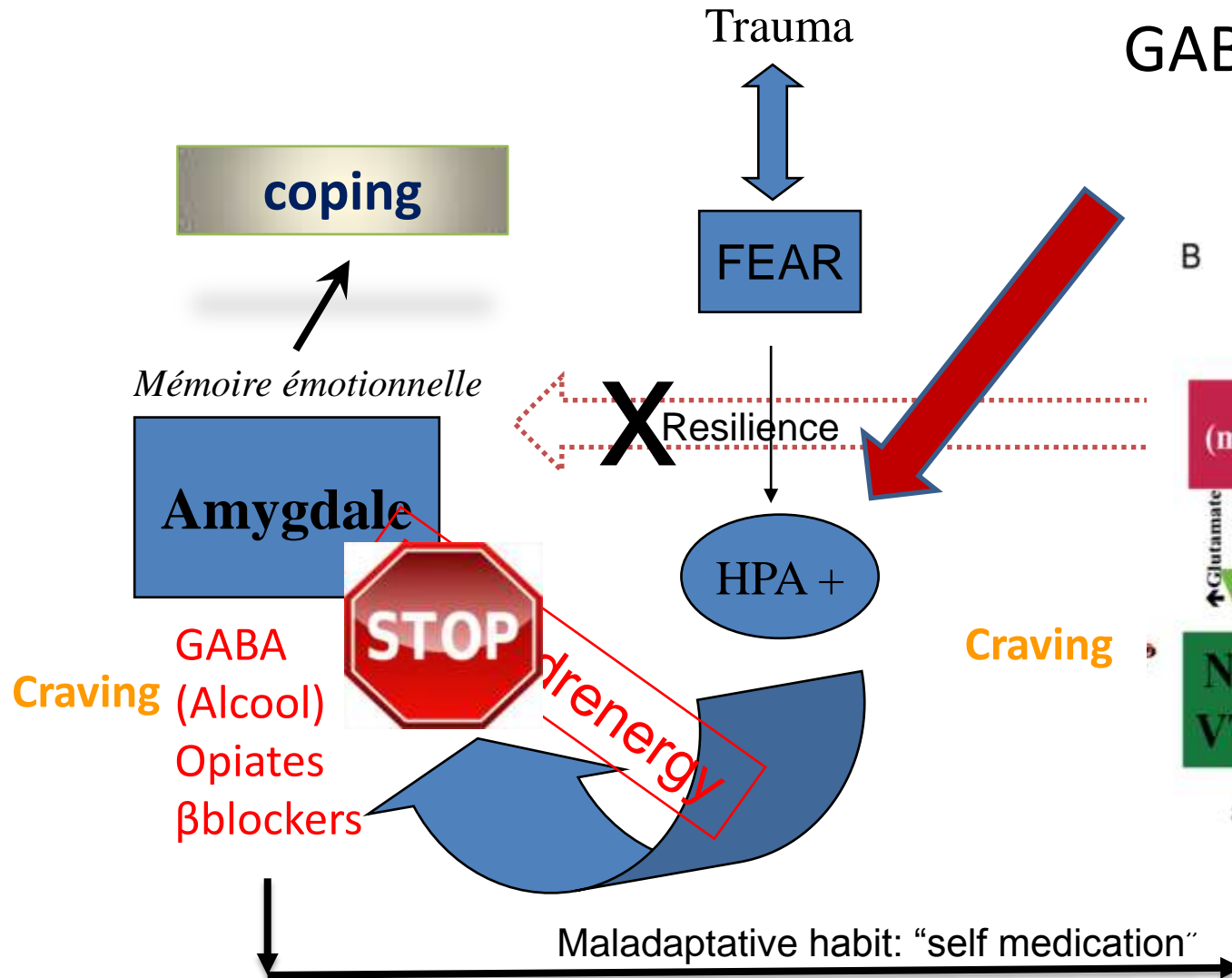
Effects of products and withdrawal on symptomatology

Saladin et al, 1995

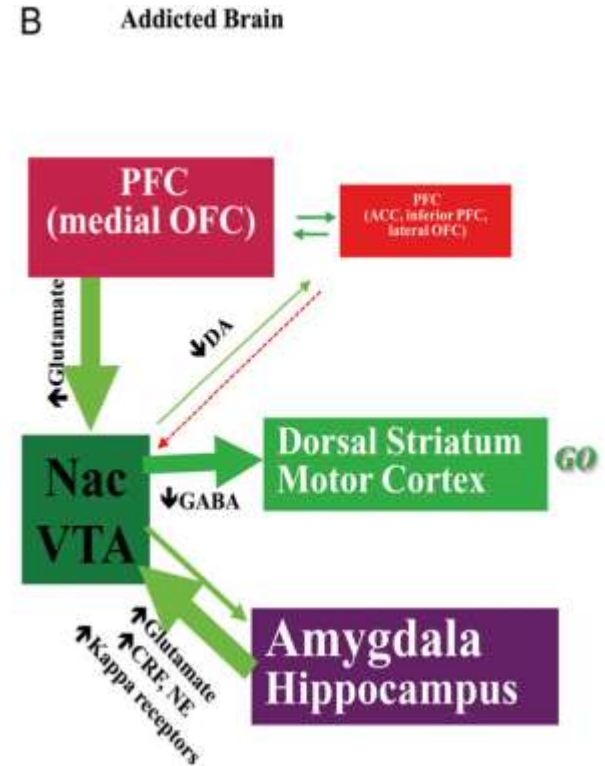
Symptomatology (number of)	Alcohol (n=19)	Cocaine (n=17)	
Avoidance (Évitement)	4.9	5.0	ns
Hypervigilance (nbre de symptomes)	5.3	4.4	P<0.015
sleeping troubles (Troubles du sommeil)	100%	71%	P=0.011
Hyper Arousal (hyper eveil sursauts)	79%	57%	P=0.086
Nightmare (cauchemars)	57%	36%	ns
Flashbacks	21%	47%	ns

Symptomatology (number of)	PTSD + SUD (28)	PTSD only (28)	
Avoidance (Évitement)	5.2	4.3	P=0.004
hypervigilance	75%	46%	P=0.04
sleeping troubles (Troubles du sommeil)	86%	46%	P=0.05
Hyper Arousal (hyper eveil sursauts)	79%	57%	P=0.086
Nightmare (cauchemars)	57%	36%	ns
flashes			P=0.026

The apocalypse trap



GABA /Glutamate Balance



Pharmacologic Management of Comorbid Post-Traumatic Stress Disorder and Addictions

Daryl Shorter, MD,^{1,2} John Hsieh, MD,³ Thomas R. Kosten, MD^{1,2}

Therapeutic strategies

Psychological therapies for post-traumatic stress disorder and comorbid substance use disorder (Review)

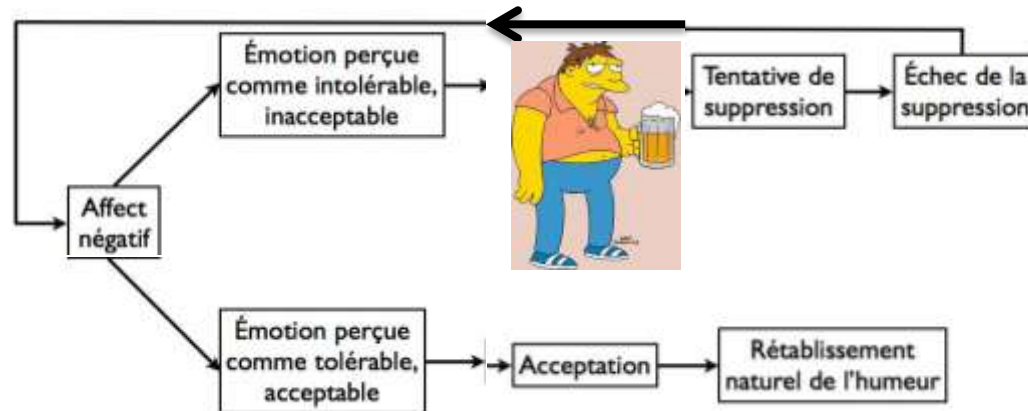
Roberts NP, Roberts PA, Jones N, Bloom J

1: Trauma focused therapies (TCC, EMDR)

2: SSRI, Antipsychotics, Anticonvulsivants

3: Adrenergic blockers

4: **Specific treatment of addiction: naltrexone, Buprenorphine, Methadone**



Modèle de la persistance de la détresse émotionnelle selon Barlow et Allen (2007)



Thank you very much for your attention

Muchas gracias por tu atención

Grazie molto per la tua attenzione

Merci beaucoup