Changes in illicit opioid use predict changes in anhedonia in opioid-dependent individuals – a longitudinal analysis

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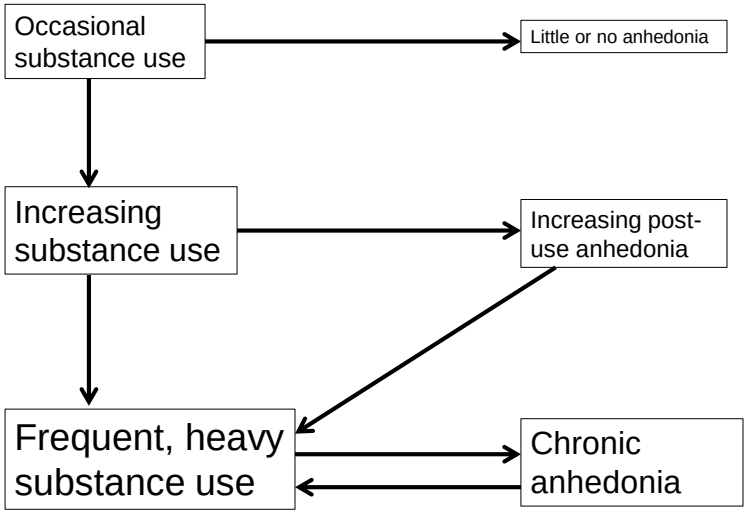
Anhedonia

- Impaired capacity to experience pleasure
- According to systematic review (Garfield, Lubman, & Yücel, 2014):
  - Anhedonia is often elevated, relative to controls, in samples of people with substance use disorder (SUD).
  - While anhedonia doesn't appear to predict later onset of SUD, SUD does predict onset of anhedonia.
  - Anhedonia appears to improve following cessation of substance use.
  - Sparse and mixed evidence for whether anhedonia predicts relapse.

Hedonic Allostasis model (Koob & Le Moal, 2001)



Participants

Characteristics (N=121)	Summary statistics			
	Mean	SD	%	n
Age	36.20	6.08		
Sex				
Males			71.9	87
Females			28.1	34
Treatment group:				
Abstinent			25.6	31
Methadone			45.5	55
Buprenorphine			28.9	35
Substance use at baseline				
Tobacco smoker			86.0	104
Days of illicit opioid use in last month	3.79	6.70		
Any past-month alcohol use			51.2	62
Any past-month cannabis use			39.7	48
Any past-month illicit benzodiazepine use			30.6	31
Any past month amphetamine use			12.4	15

Procedure

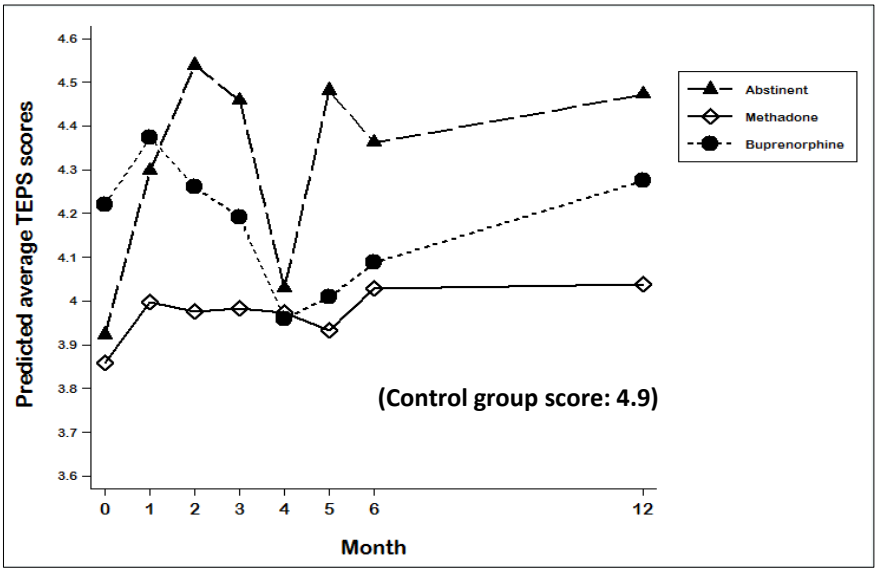
Time	Measures	Completion rate	
		%	n
Baseline	Demographics, SCID-I/P, TLFB, TEPS, CES-D	100	121
1-month	TLFB, TEPS, CES-D	90.1	109
2-month	TLFB, TEPS, CES-D	87.6	106
3-month	TLFB, TEPS, CES-D	82.6	100
4-month	TLFB, TEPS, CES-D	86.8	105
5-month	TLFB, TEPS, CES-D	79.3	96
6-month	TLFB, TEPS, CES-D	88.4	107
12-month	TLFB, TEPS, CES-D	82.4	98

SCID-I/P: Structured Clinical Interview for DSM-IV-TR Disorders (to assess substance use disorder and other diagnoses).
TLFB: Timeline follow-back, to assess number of days of medication, tobacco, alcohol, and illicit drug use in the past 30 days.
TEPS: Temporal Experience of Pleasure Scale, to assess past-week anhedonia.
CES-D: The Center for Epidemiologic Studies Depression scale, so we could statistically control for the effects of depression on anhedonia.

Change in anhedonia

Marginal effects	Unadjusted model [a]				Adjusted model [b]		
	β	95% CI of β	P	p-value for interaction with time	β	95% CI of β	p
Time (ref=Baseline)							
1st month	0.21	0.03; 0.39	**0.020**		0.20	0.03; 0.36	**0.017**
2nd month	0.21	0.05; 0.38	**0.010**		0.21	0.06; 0.35	**0.005**
3rd month	0.18	0.01; 0.35	**0.035**		0.17	0.02; 0.33	**0.026**
4th month	0.00	-0.17; 0.18	0.980		0.00	-0.15; 0.16	0.972
5th month	0.09	-0.09; 0.27	0.325		0.10	-0.06; 0.26	0.211
6th month	0.15	-0.01; 0.32	0.065		0.14	0.00; 0.29	0.054
12th month	0.23	0.05; 0.40	**0.012**		0.23	0.08; 0.38	**0.003**
Illicit opioid use							
Between subject	-0.01	-0.04; 0.02	0.422	0.188	0.005	-0.02; 0.03	0.676
Within subject	-0.02	-0.03; -0.01	**<0.001**	0.932	-0.015	-0.02; -0.01	**0.001**
Group (ref=abstinent)				**0.043**			
Methadone	-0.27	-0.62; 0.08	0.134		-0.34	-0.64; -0.03	**0.029**
Buprenorphine	-0.14	-0.53; 0.24	0.456		-0.13	-0.47; 0.20	0.430

Effect of treatment group



Summary and implications

- Changes in illicit opioid use predicted changes in anhedonia.
- Anhedonia gradually declined over time, particularly in the group that had the lowest rates of illicit opioid use.
- Together, this supports the idea that anhedonia is symptomatic of an active substance use disorder.

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