

Co-Occurring Disorders in Gambling Disorder

Jon E. Grant, JD, MD, MPH
Professor
University of Chicago
Pritzker School of Medicine



Disclosure Information

- I have the following **financial** relationships to disclose:
 - No conflicts with respect to this presentation
 - My research is supported by NIDA and Grant/Research support from: Janssen and Biohaven Pharmaceuticals
 - I will discuss off-label use and/or investigational use in my presentation as there are no FDA-approved medications for gambling addictions.



THE WEIRD WORLD OF

GAMBLING

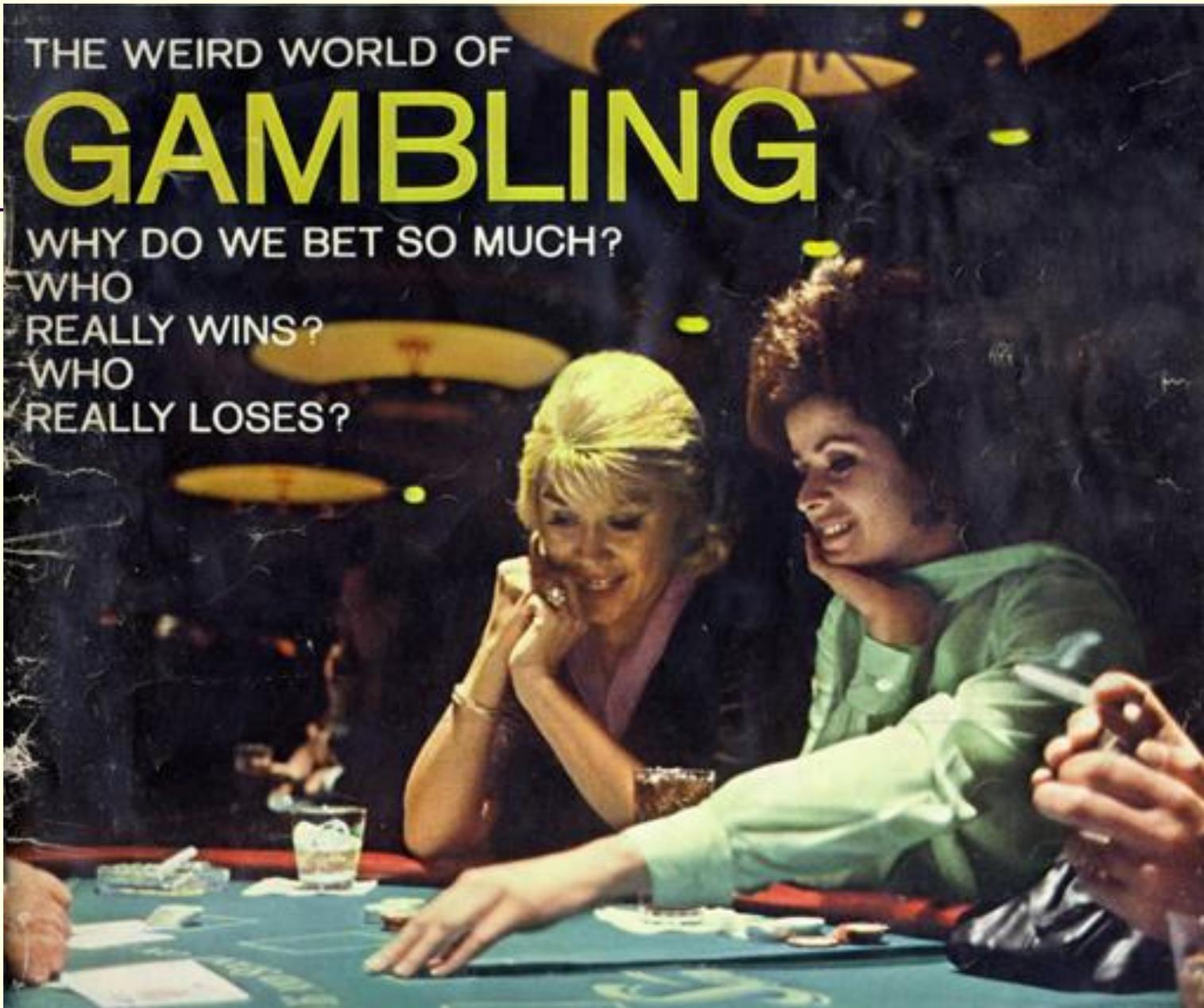
WHY DO WE BET SO MUCH?

WHO

REALLY WINS?

WHO

REALLY LOSES?





Comorbidity

Comorbidity

- Dual (or more) diagnosis is the “usual”, and not the exception
- It is important to screen and assess for co-morbid conditions when assessing for gambling disorder
- If a mental health problem or a substance abuse disorder co-exists with gambling disorder, should diagnoses should be considered primary? Should both be treated simultaneously or serially?

Order of Onset

- National Co-Morbidity Survey Replication
- 3,435 respondents assessed for GD
- Prevalence and odds ratios for co-morbidity
- Looked at GD predicting other disorders and other disorders predicting GD

Mood & Anxiety Disorders

Disorder	Prevalence	O.R.	GD First	Other First	Same Time
MDD or Dysthymia	38.6%	2.5	20.5%	73.5%	6.1%
Bipolar	17.0%	4.6	29.2%	46.3%	24.5%
Any Mood	55.6%	3.7	23.1%	65.1%	11.7%
Panic	21.9%	4.9	10.7%	81.8%	7.5%
Generalized Anxiety	16.6%	2.8	9.3%	79.8%	10.9%
Phobia	52.2%	3.2	0.0%	100.0%	0.0%
Any Anxiety	60.3%	3.1	13.4%	82.1%	4.5%

Substance Use & Impulse Control Disorder

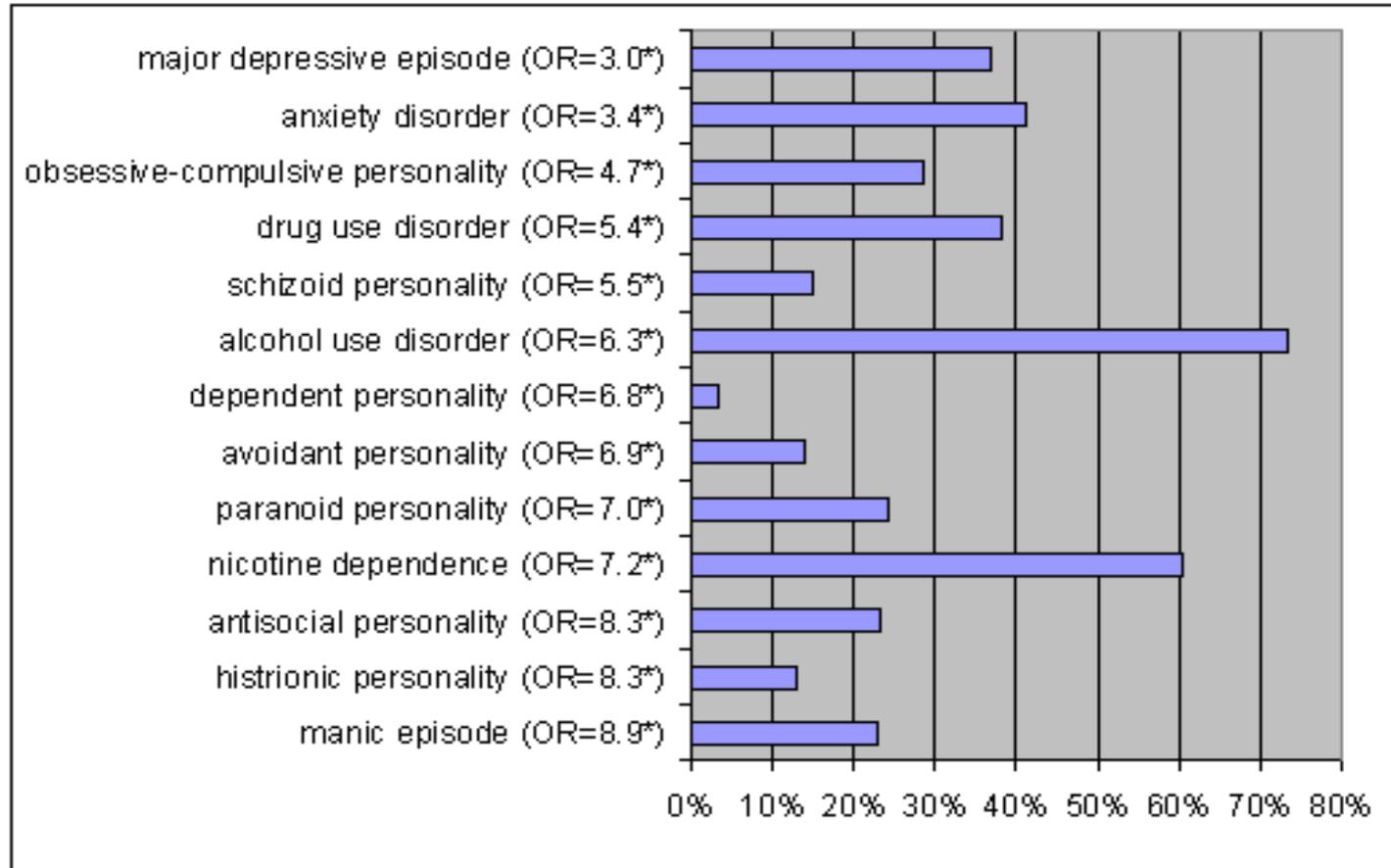
Disorder	Prevalence	O.R.	GD First	Other First	Same Time
Abuse	46.2%	4.5	18.7	70.9	10.4
Dependence	31.8%	5.8	44.3	55.7	-
Nicotine	63.0%	3.9	61.3	33.0	5.7
Any Substance	76.3%	5.5	36.2	57.4	6.4
Conduct Disorder	24.9%	3.1	100.0	0.0	0.0
Intermittent Explosive	27.0%	3.1	100.0	0.0	0.0

Co-Occurring Disorders with Gambling Disorder

- Substance use disorders
- Attention deficit disorder
- Anxiety
- Depression
- Suicide
 - contemplation 48-70%
 - attempt 13-20%
- Personality disorders

*Almost all data derived from treatment-seeking gamblers rather than community sample

Percentage of Gamblers with Comorbid Disorders (lifetime)



(adapted from Petry et al, 2005)

Psychiatric Comorbidity – Which Came First

Disorder	Prevalence of disorder among those w/ PG	Temporal Sequence (for those with PG and other disorder)		
		PG first	Other disorder first	Onset at same time
Any mood disorder	55.6%*	23.1%	65.1%	11.7%
Any anxiety disorder	60.3%*	13.4%	82.1%	4.5%
Any impulse control disorder	42.3%	0.0%	100%	0.0%
Any substance use disorder	42.3%*	36.2%	57.4%	6.4%

- Note: Any impulse control disorder included ADD/ADHD
- Almost all (96.3%) participants had another lifetime disorder
- 64.3% suffered from 3 or more disorders

(adapted from Kessler et al., 2008)

Comorbidity of Gambling Disorder and Substance Use Disorders

- Rate of substance abuse 7-fold greater in gamblers than non-gamblers
- Common genetic vulnerability between gambling and alcohol dependence
- 33% of substance abusers may have gambling disorder

Substance Use Disinhibits Gambling

- Gambling while drinking is common
- Substances can adversely affect cognition leading to poor judgment and increased risk-taking
- Alcohol may increase risk-taking by restricting attention to only salient cues and ignoring actual odds and past losses

Gambling Promotes Substance Use

- Regular gamblers self-administered more alcohol in a simulated gambling situation than did matched study participants engaged in a control activity

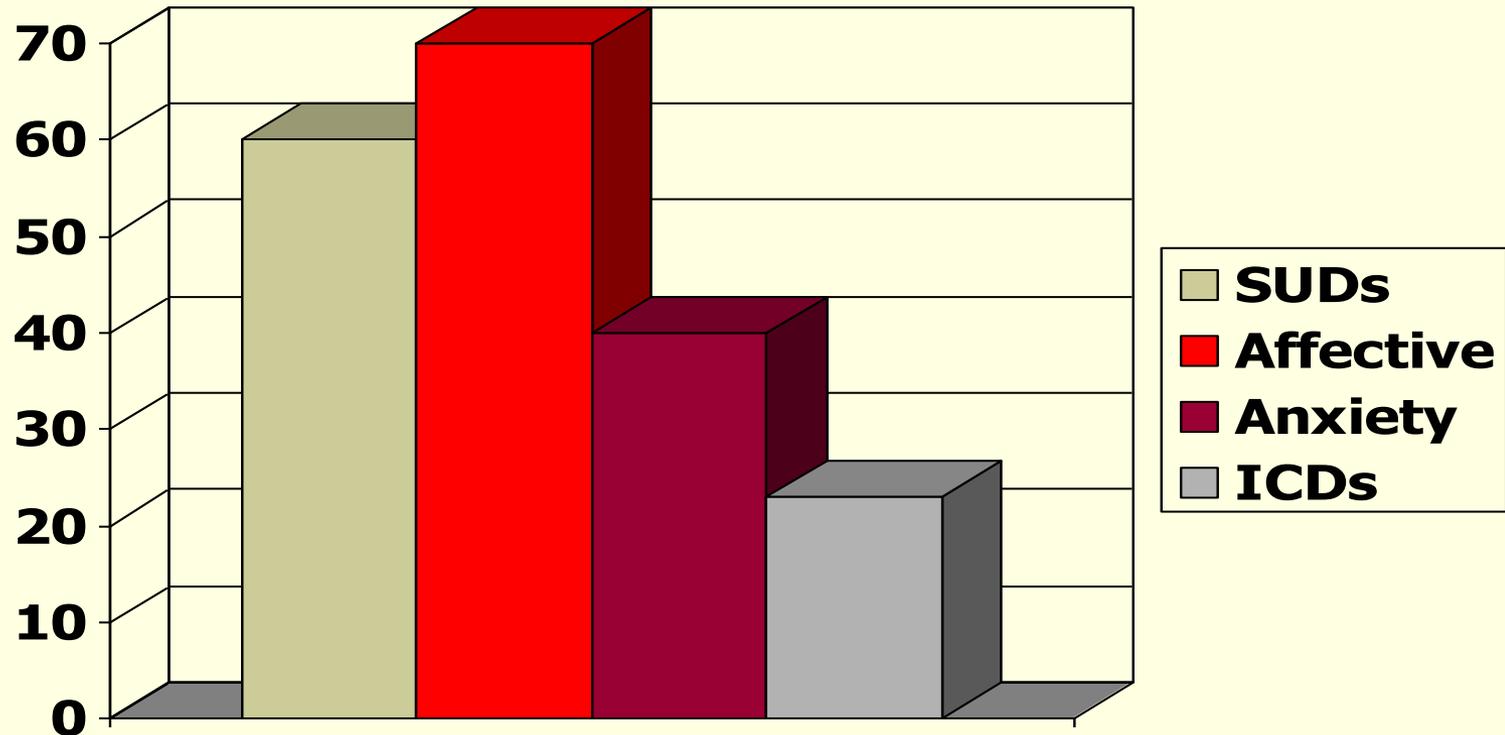
Screening for Other Addictions/ Mental Health Issues

- Addiction Severity Index (ASI)
- Adult ADHD Self-Report Scale (ASRS-v1.1)
- Alcohol Use Disorder Identification Test (AUDIT)
- Drug Use Disorder Identification Test (DUDIT)
- Beck Depression / Anxiety Inventory (BDI / BAI)
- Personal Health Questionnaire (PHQ-4)
- Suicidal Behavior Questionnaire-Revised (SBQ-R)
- Brief Symptom Inventory (BSI)
- Stress Proneness Scale
- URICA (readiness to change)
- FRIEL Co-dependency Inventory

Social/Personal Consequences

- **Family dysfunction and domestic violence**
 - spousal and child abuse
- **Alcohol and other drug problems**
- **Psychiatric conditions**
 - major depression and anxiety disorders
- **Suicidal thoughts and attempts**
- **Significant financial problems**
 - bankruptcy, unemployment, poverty)
- **Criminal behavior**
 - theft, prostitution, homicide, fraud, embezzlement)

Co-Occurring Disorders in PG



ADHD and Gambling

The ADHD - GD connection: adult data

GD

non-GD

Rate of childhood ADHD

15-36%

4-8%

Cannabis and Gambling

- Many young adult gamblers smoke marijuana
- Unclear the effects of marijuana smoking on gambling
- Gamblers using cannabis had higher rates of current alcohol use disorders and more frequent gambling behavior per week.
- Gamblers who used cannabis also exhibited significantly greater scores on measure of attentional impulsivity.

Obesity

- 207 non-treatment seeking young adults grouped according to weight
- Obese gamblers consumed more nicotine and lost more money per week to gambling.
- Obesity was associated with decision making and sustained attention impairments in gamblers, along with greater monetary loss due to gambling

Role of Trauma

- Neglectful parenting style
- Addictive behaviors - more likely to report histories of
 - physical neglect
 - emotional abuse
 - Sexual abuse

Suicide among problem gamblers

- Up to 20-25% of problem gamblers attempt suicide
- To seek a solution (Quick fix)?
- Goal is to seek cessation of consciousness (Escape)
- Stressor in suicide is unendurable psychological pain (Critical Self Talk)
- Emotions in suicide is hopelessness & helplessness

Other Health Issues

Health concerns of pathological gamblers:

- Heart disease
 - Liver disease
 - Hypertension
-
- More likely to have had an injury
 - More likely to have needed ER visit
 - 28% of homeless people had gambling problem



20,679* Physicians

say "LUCKIES are
less irritating"

"It's toasted"

Your Throat Protection

against irritation against cough

The figures quoted have been checked and certified to by

Increased Smoking Rates and Gambling Disorder

- 62% of treatment seeking gamblers in Connecticut
- 69% in Minnesota smoked
 - much higher than general population 25%

While on the topic of health...smoking!

- Elevated rates of nicotine dependence have been linked to increased gambling severity.
- Problem gamblers who smoke also show higher levels of impulsivity (UPPS-P, negative urgency) compared to non-smoking gamblers.

Smoking and Gambling: How and Why

- Nicotine may raise the “hedonic” value of gambling
- Nicotine may raise the “cue reactivity” of things surrounding gambling
- Nicotine may increase attention and focus on gambling (“stay in action”)

Psychological Explanations

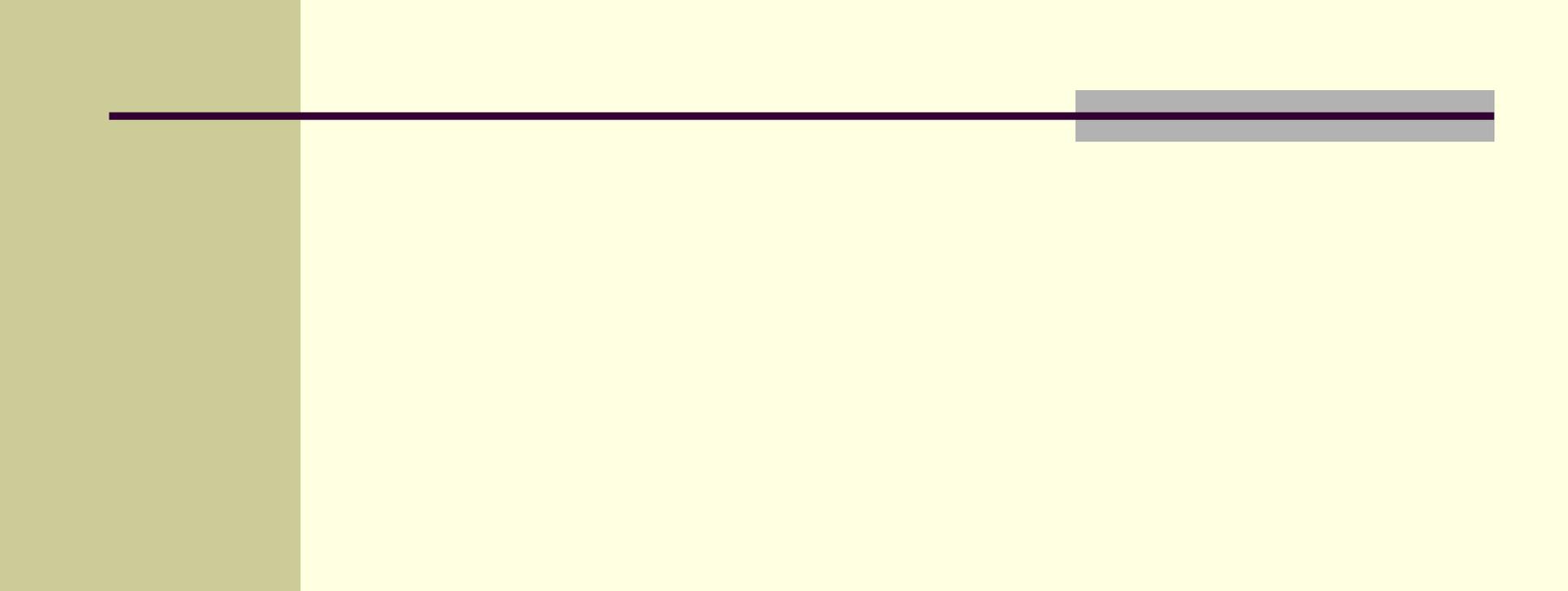
- Smoking eases stress of gambling
- Maximizes the “escape” and “action” of gambling
- Activity justified by gambler (e.g. “might as well”)
- High impulsivity
- Psychological myopia

Sociological Explanations

- Access
- Availability
- Tolerability
- Cultural portrayal
- Peer pressure
- Learned co-occurring activities

UCLA Gambling Sleep Study

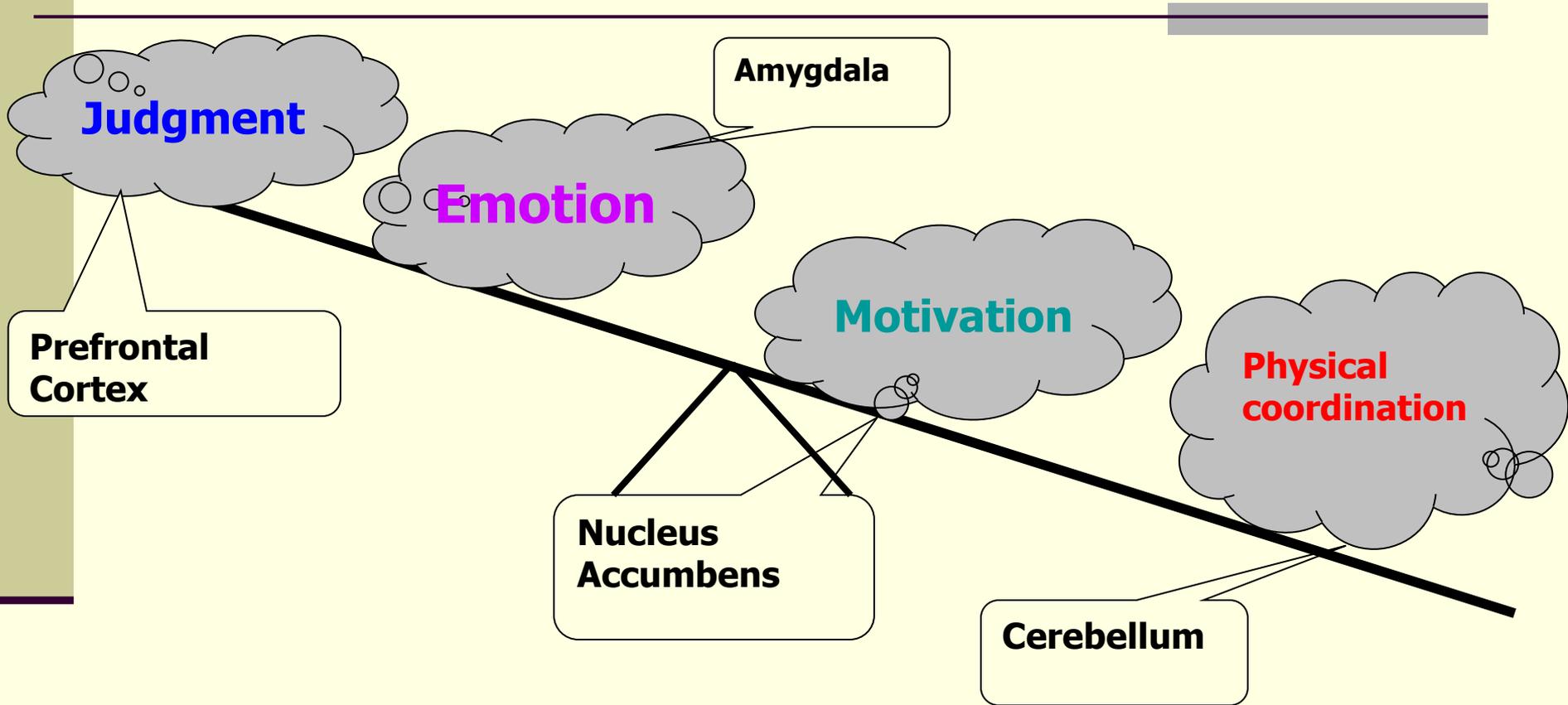
- National Epidemiological Survey: (N=3412)
 - PGs were almost 3.5 times more likely to experience a sleep problem compared to individuals who did not have a gambling problem
- Community Survey: (N=120)
 - PGs experience significantly poorer sleep quality and increased daytime sleepiness relative to those that recreationally gamble



What explains
comorbidity?

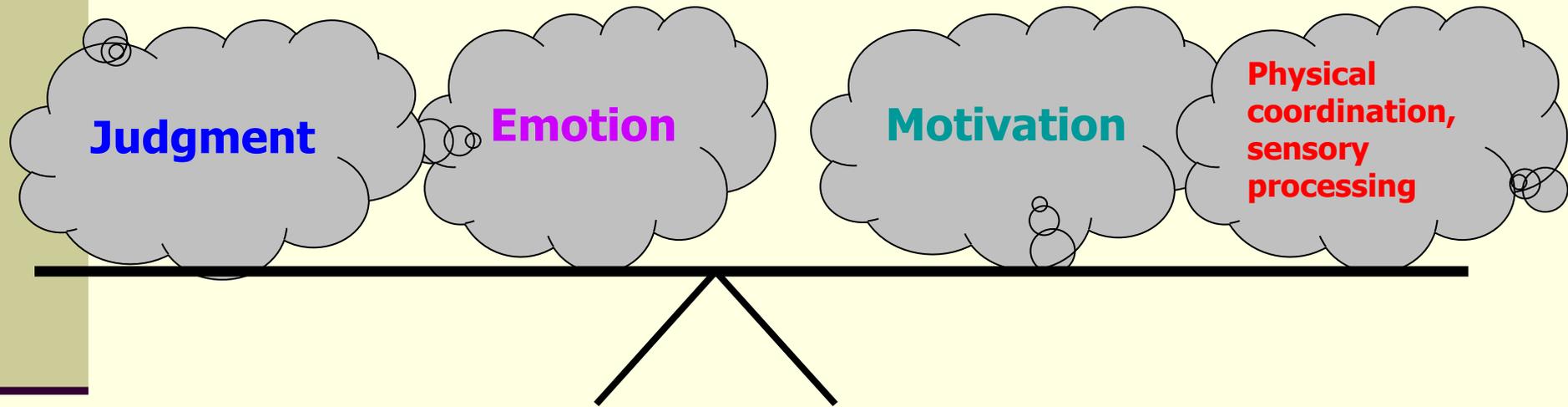
Developmental Biology

- Gambling addiction generally start in young adulthood.
- Environmental and genetic influences - vulnerability to and expression of gambling addiction
- Changes in brain structure and function during adolescence might influence the motivation to engage in risk-taking behaviors.



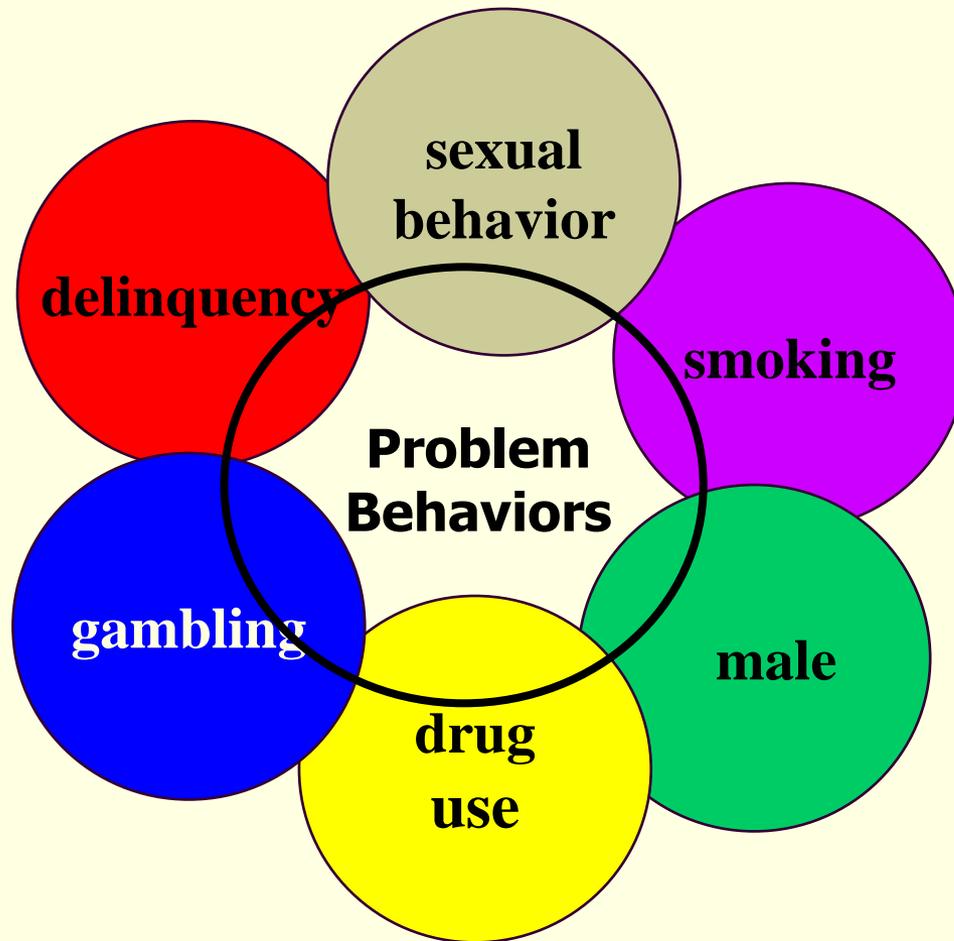
Notice: Judgment is last to develop!

Age 24



Balance

Youth Problem Behaviors

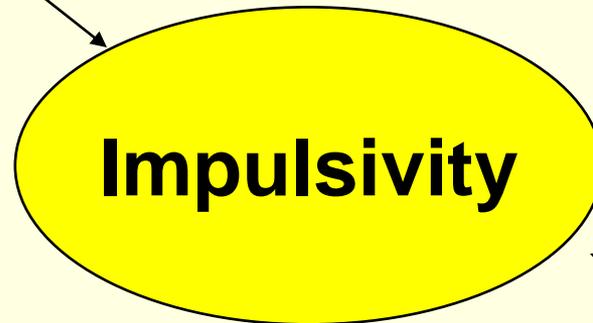


Family/Genetic Factors

- Male twin study - 12 to 20% of the genetic variation in risk for gambling, and 3 – 8% of the nonshared environmental variation in the risk for gambling, accounted for by risk for alcoholism.
- Additionally, 64% of the co-occurrence between gambling and alcoholism - attributable to genes that simultaneously influence both disorders.

Neurochemistry of Behavioral Dyscontrol

GLUTAMATE
SEROTONIN
DOPAMINE



GLUTAMATE
DOPAMINE

Glutamate

- Levels of glutamate within the nucleus accumbens mediate reward-seeking behavior
- Restoring extracellular glutamate concentration in the nucleus accumbens seems to decrease cravings.

Role of Dopamine

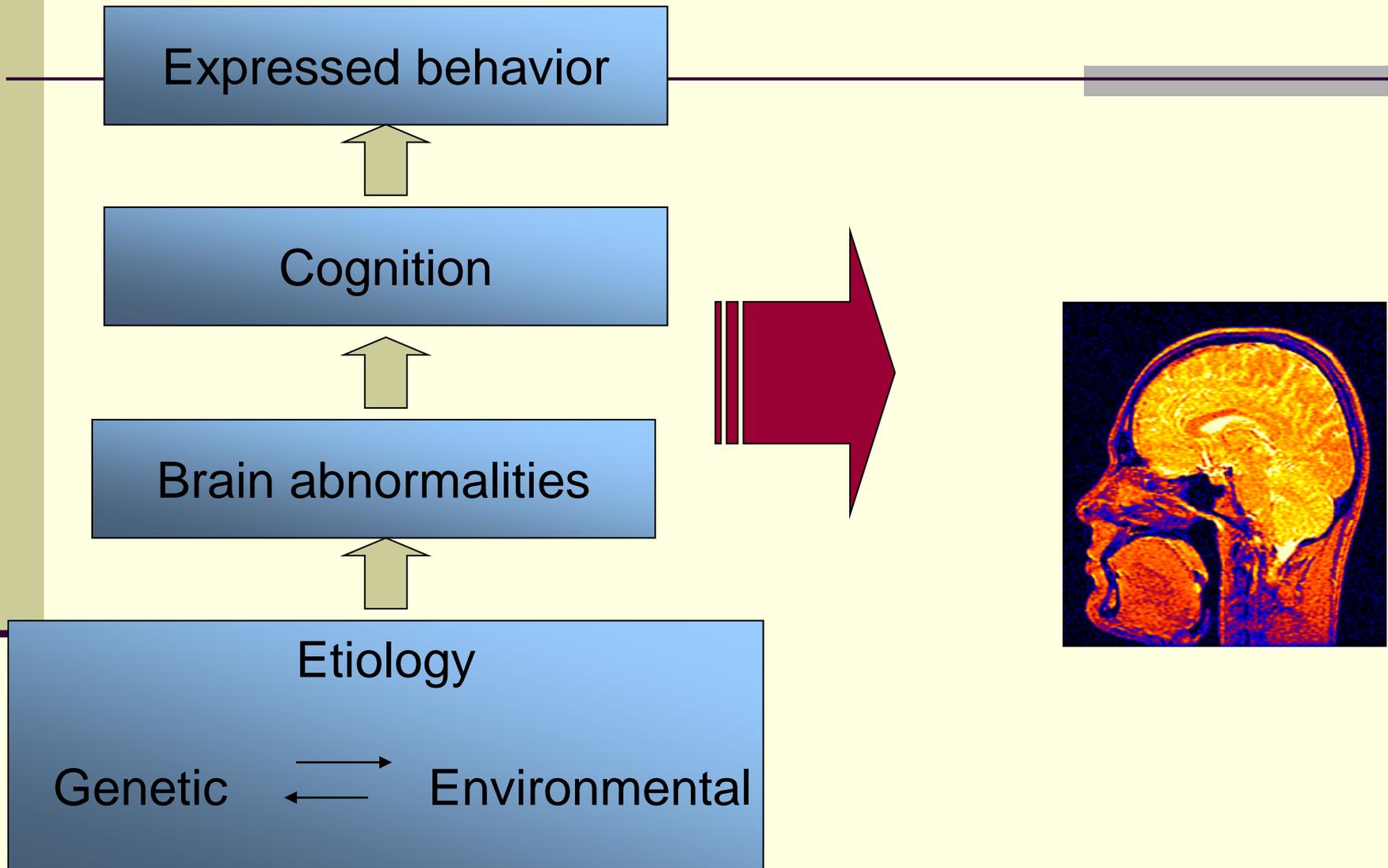
- Dopamine release into the nucleus accumbens - translates motivated drive into action - a “go” signal
- Dopamine release associated with rewards and reinforcing
- Dopamine release - maximal when reward is most uncertain

Biochemistry – Opioid System

- The endogenous opioid system influences the experiencing of pleasure.
- Opioids modulate mesolimbic dopamine pathways via disinhibition of γ -aminobutyric acid input in the ventral tegmental area.
- Addictions have been associated with elevated blood levels of the endogenous opioid β -endorphin.

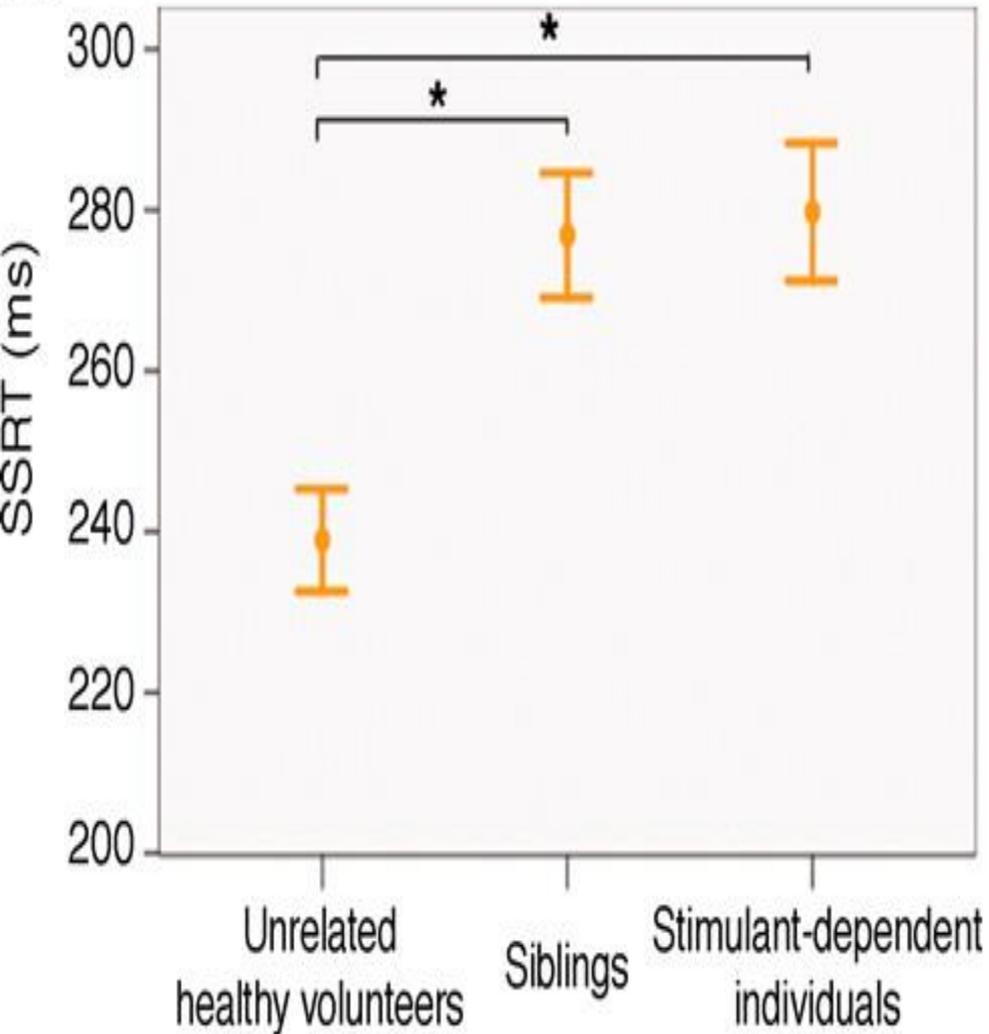
Neurocognition in Gambling

- Executive function deficits are greater in those with gambling than in control subjects, including:
 - Planning
 - Cognitive flexibility
 - Inhibition

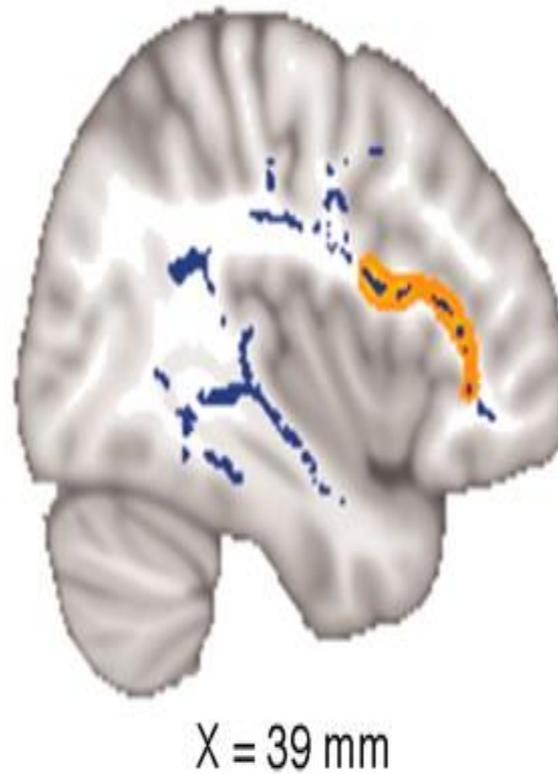


Inhibitory Control - Familial

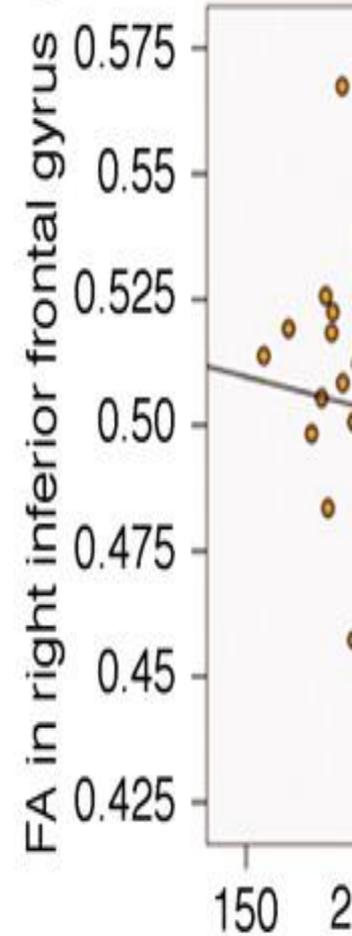
A



B

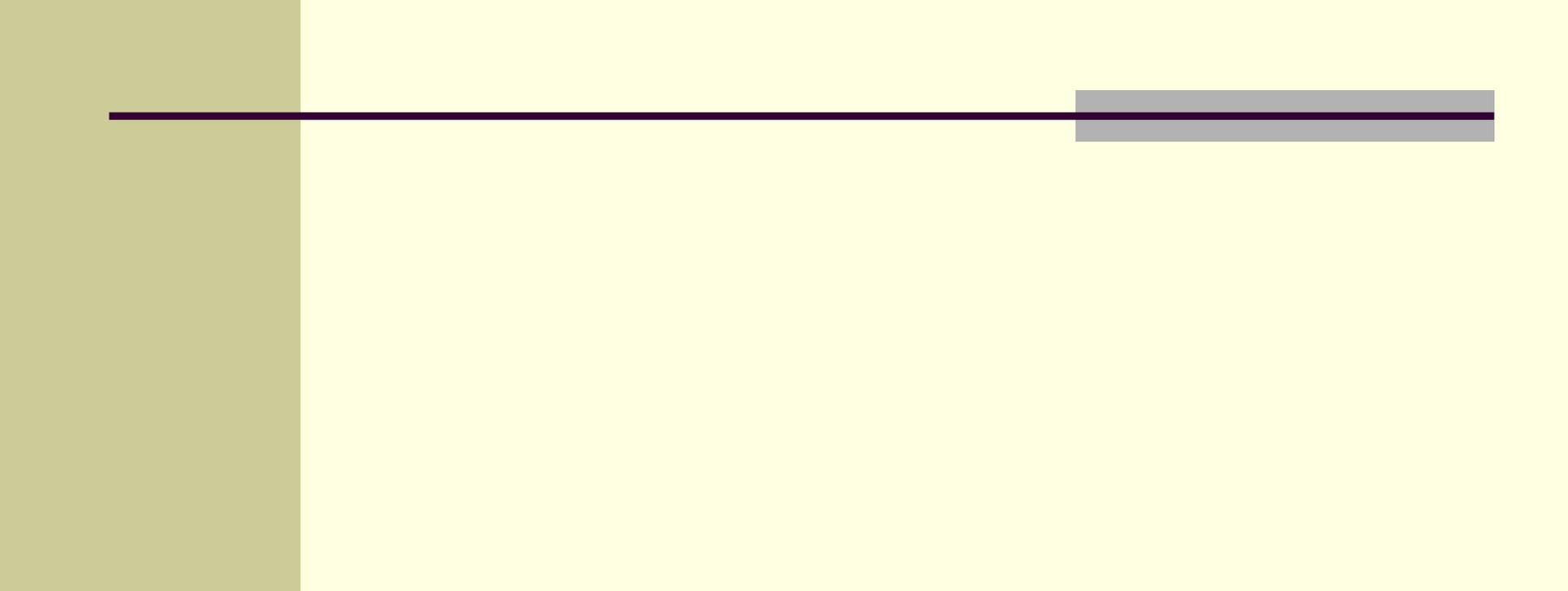


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Impulsivity as an Endophenotype

- **Impulsivity Across Psychiatric Groups**
 - **Substance use disorders**
 - **Behavioral addictions**
 - **ADHD**
 - **Bipolar disorder**
 - **Personality disorders**
 - **Suicidality**



What do we do about
comorbidity?



"Betcha I recover before you do."

Treatment

- Pharmacotherapy
 - No medication FDA-approved for GD
- Cognitive-Behavioral Therapy (CBT)
 - Length of treatment unknown; brief interventions have shown benefit;
 - Multiple versions of CBT have shown benefit

Psychosocial Treatments

- Motivational enhancement
- Individual and Group Cognitive behavioral therapy
 - social skills, assertiveness, anger management; cognitive restructuring
- Imaginal exposure
- Brief interventions

Psychosocial Treatments (Cont)

Brief Interventions

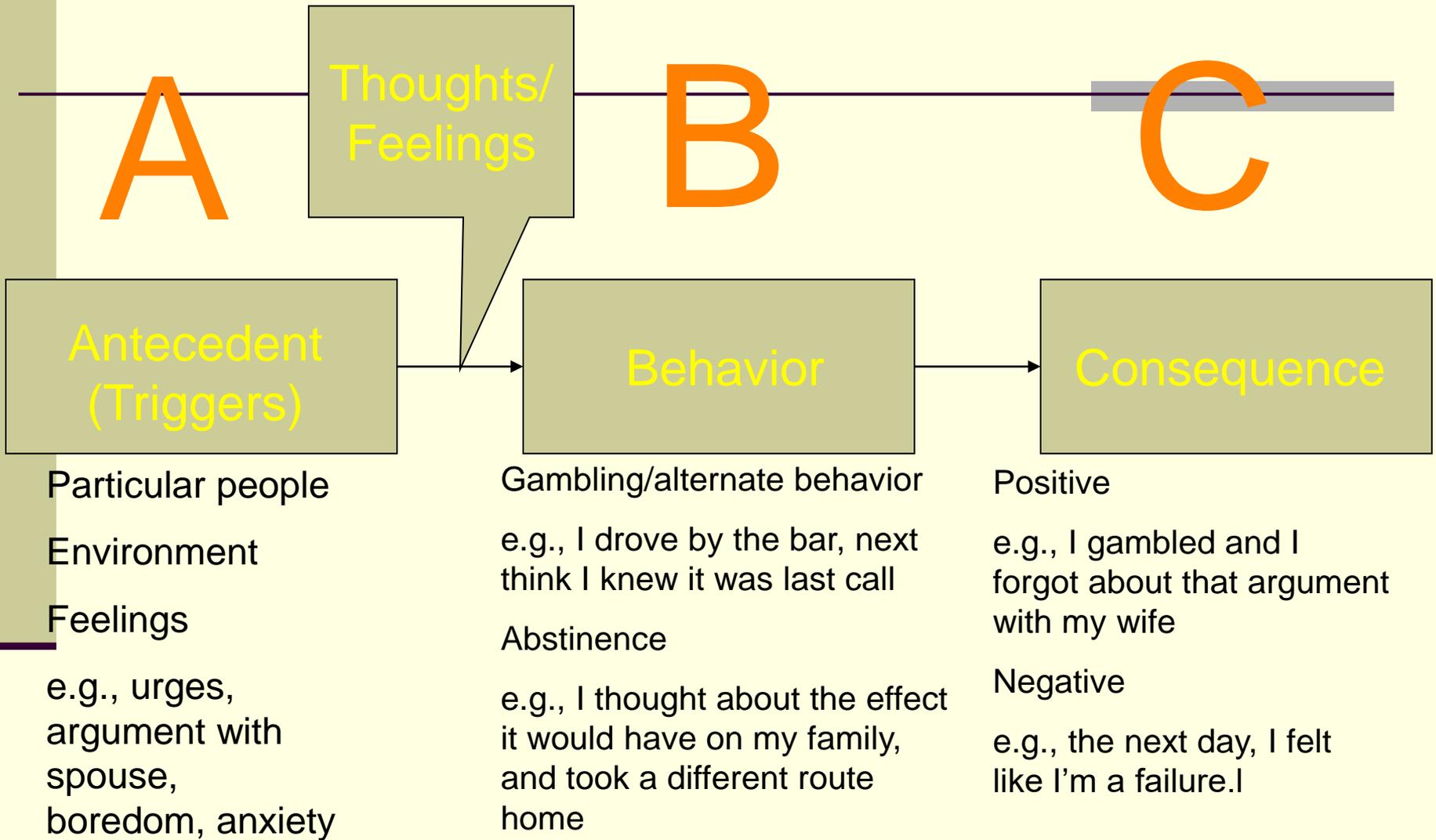
Single-session interventions, workbooks, bibliotherapy, or motivational interviewing.

Workbooks include CBT and motivational enhancement techniques.

CBT workbook, a workbook plus a telephone motivational enhancement.

Motivation to Quit Gambling

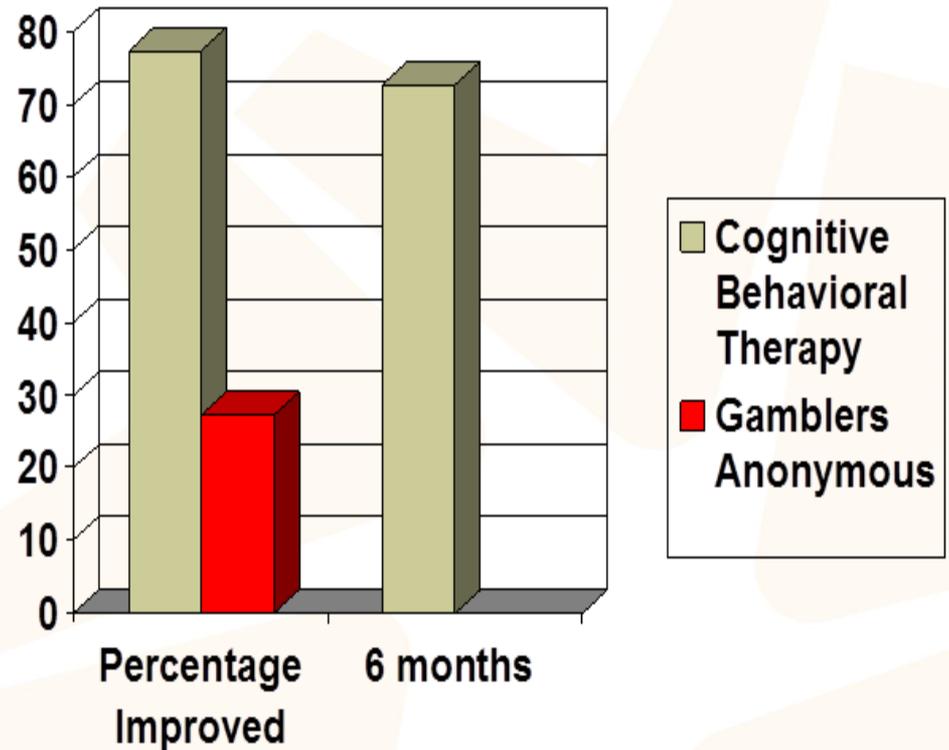
1) <u>Positive</u> aspects of impulsive behavior (what are the positive things gambling gives me?)	2) <u>Negative</u> aspects of quitting (what do I lose if I stop gambling?)
3) What are the <u>negative</u> consequences of gambling (current and future?)	4) What are the <u>advantages</u> of quitting gambling (what do I have to gain?)



Psychosocial Treatments (Cont)

Imaginal Exposure

Client and therapist develop an imaginal exposure script that includes all the relevant internal and external triggers that relate to the behavioral addiction



Groups

Group CBT – 3 studies

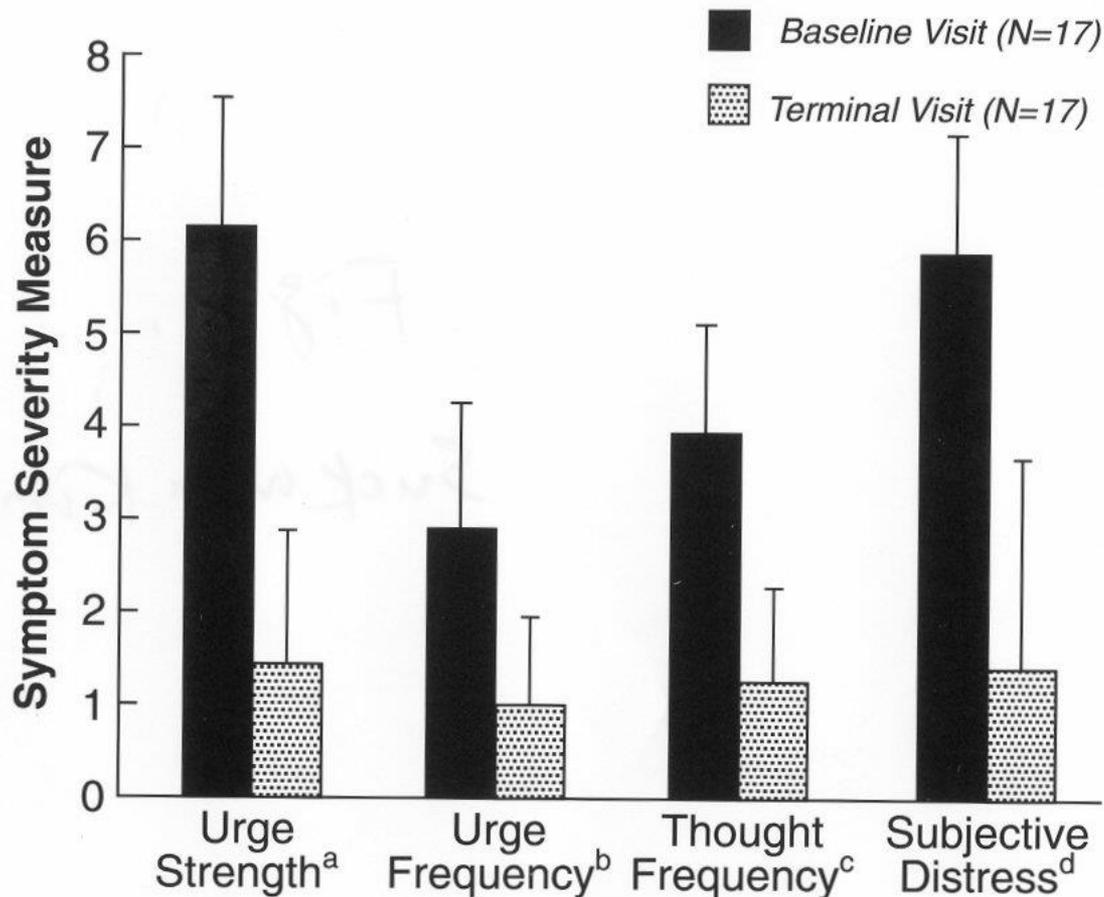
- Cognitive restructuring
- Coping skills and identification of high-risk situations.
- Imaginary exposure with response prevention.
- Financial limit setting and activity scheduling of leisure activities.
- Problem-solving training
- Relapse prevention



Opiate Antagonists

Figure 1. Baseline and Terminal Visit Gambling Symptom Ratings

(Carry Forward Paired t-test)



^a 0=None, 2=Mild, 4=Moderate, 6=Severe, 8=Extreme. Significantly different ($t=14.28$, $p<0.05$)*.

^b 0=None, 1=Once a day, 3=Three times a day, 5=Five times a day, 6=More than five times a day. Significantly different ($t=7.29$, $p<0.05$)*.

^c 0=None, 1=Once a day, 3=Three times a day, 5=Five times a day, 6=More than five times a day. Significantly different ($t=5.25$, $p<0.05$)*.

^d 0=None, 2=Mild, 4=Moderate, 6=Severe, 8=Extreme. Significantly different ($t=8.68$, $p<0.05$)*.

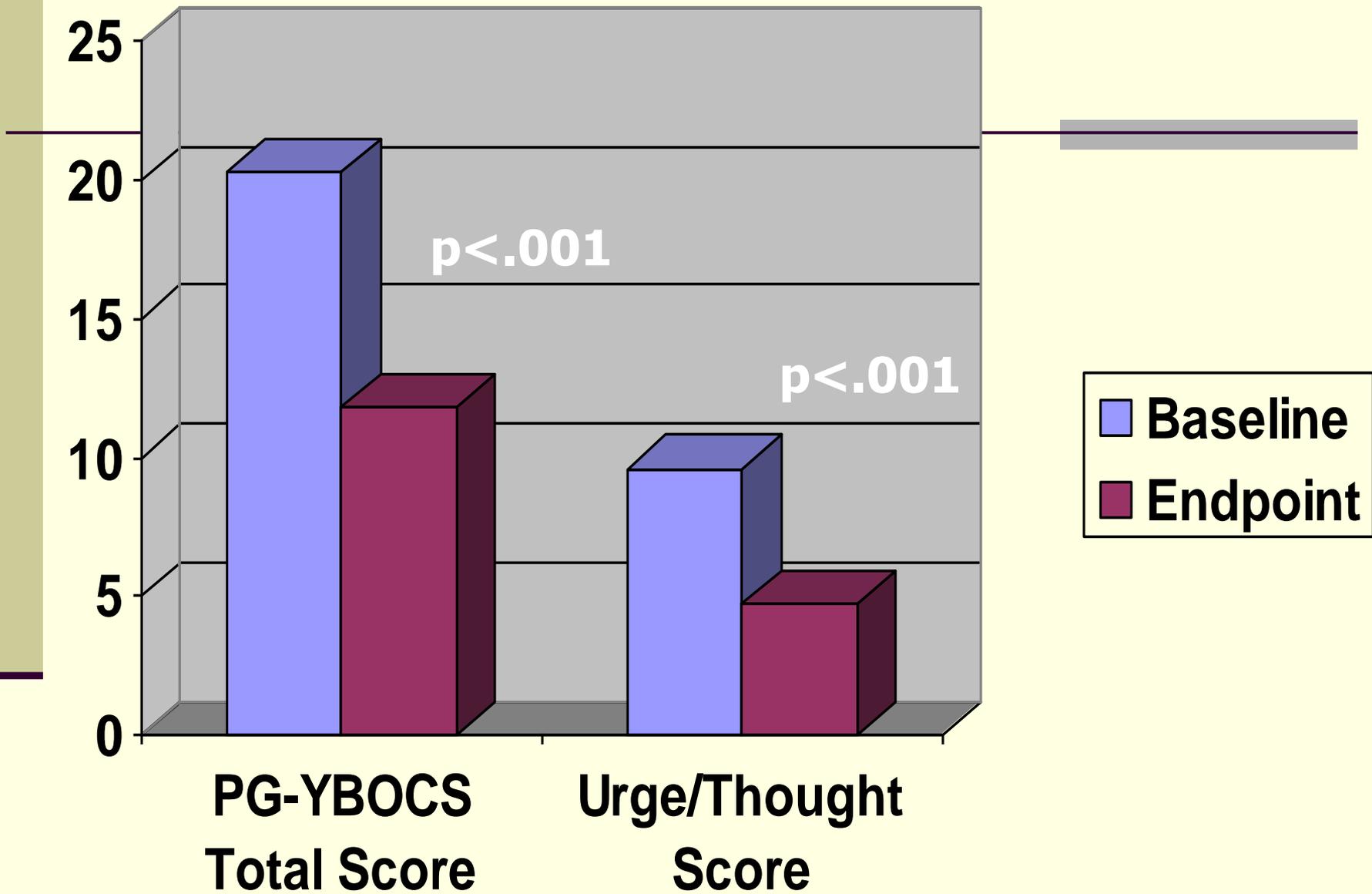
* Bonferroni corrected

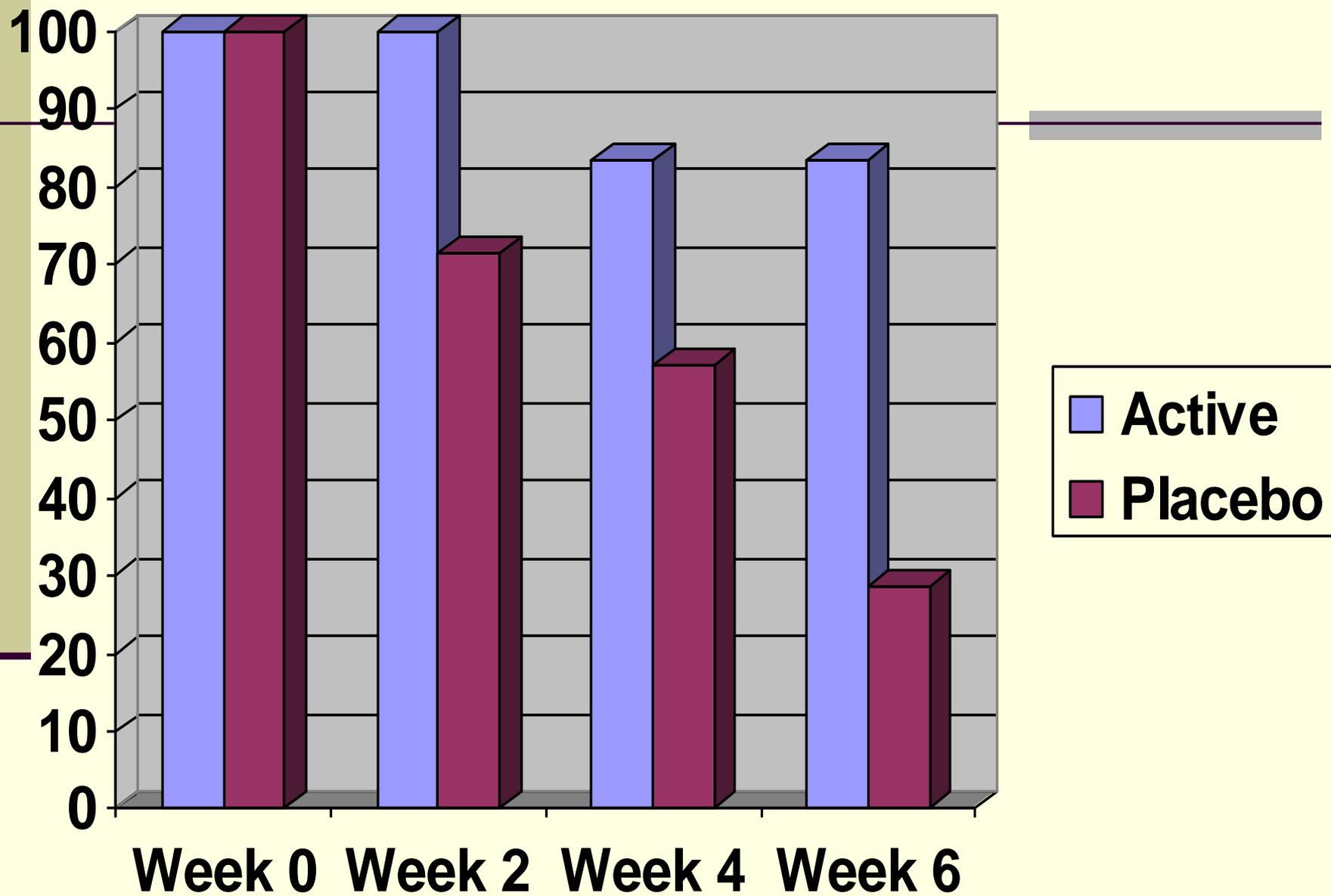


Glutamate Agents

N-Acetyl Cysteine

- Amino acid and antioxidant
- Lack of significant side effects
- Levels of glutamate within the nucleus accumbens mediate reward-seeking behavior
- NAC potentially modulates brain glutamate transmission





Clinical Subtyping

Comorbidity?

Neurocognition?

Genetics?

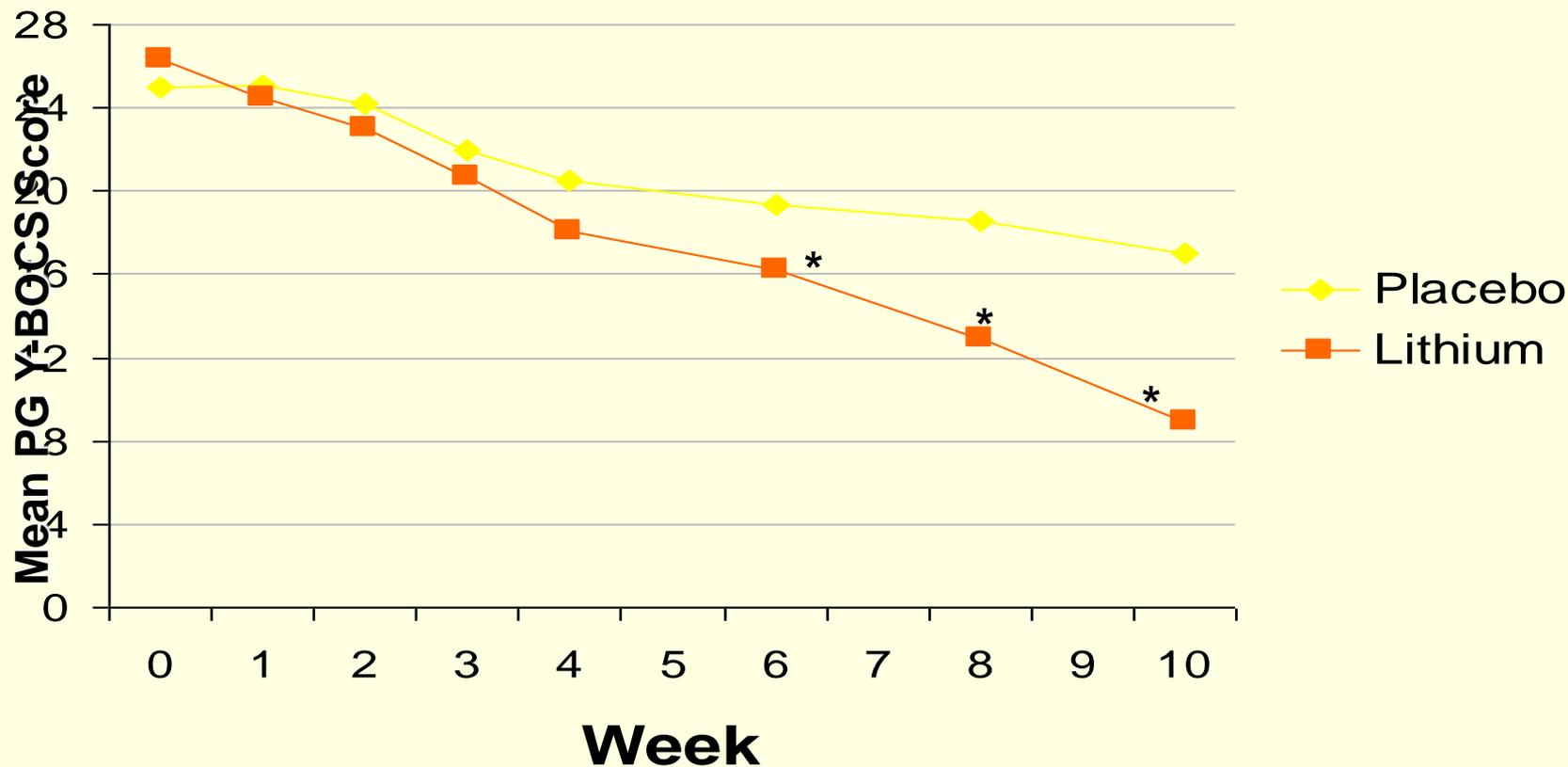
Imaging?

Comorbidity – Means What?

- Gambling causes the other disorder?
- Other disorder causes gambling?
- Gambling one branch of a tree?
- Co-occurrence by chance?
- Common stress, genetics, trauma cause?

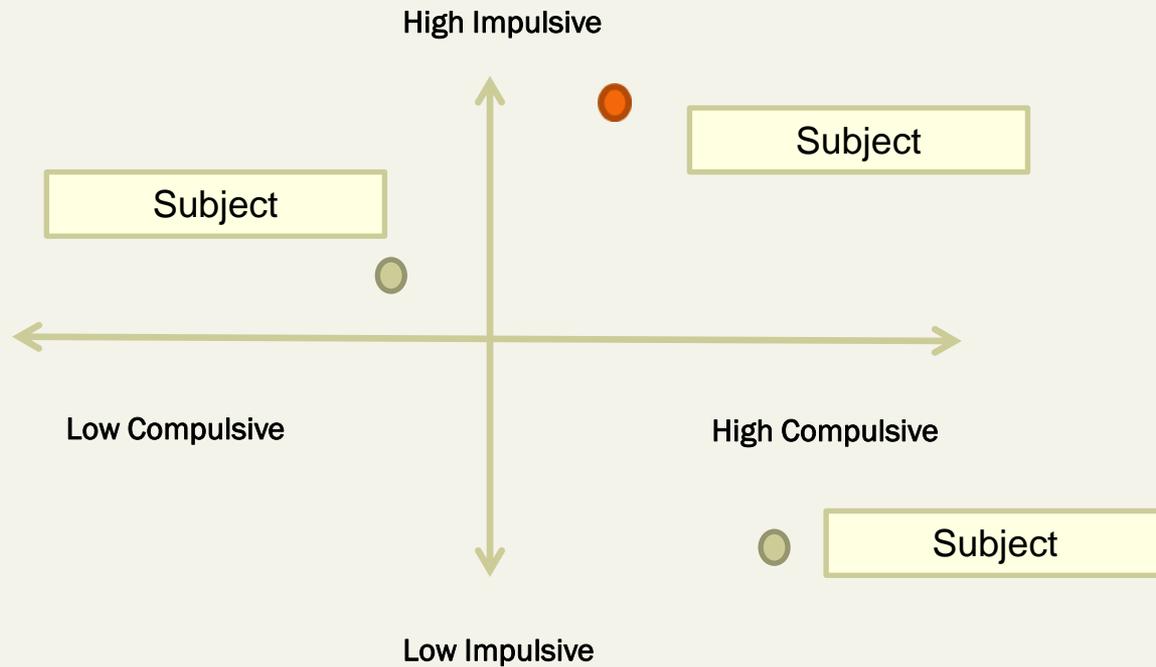
Bipolar Spectrum Gamblers

PG-YBOCS Total Score Over Time



* p<.05

Heterogeneous Profiles?



Case Example

Bank Robber

- 22 year old Caucasian
- No prior legal problems
- Worked in a bank
- Problem gambling onset at age 20
- Ran up debts; borrowing from family
- Impulsively “robbed” a bank

Case Example

Bank Robber

- Court-ordered for an examination
- Results reveal no other psychopathology other than PG
- Neurocognitive testing showed attentional and impulsivity impairments
- No brain imaging

Case Example

Bank Robber

- Very personable to interview
- Accepts guilt
- Wants “treatment” instead of incarceration
- States he won’t gamble ever again

Case Study 2 – Other Addictions

- Brad is a 30 yo separated male with 2 young children. He has a Hx of polysubstance abuse, a 10 year Hx of gambling disorder (sports), early trauma experience, and ADHD.
- He reports returning to ETOH this past year (after 7 years sober), increasing consumption since separation from wife. Abstinent from gambling 3 months, now in relapse mode. “Gambling fills more voids”.
 - Where to start?
 - What to include in his treatment plan?



jongrant@uchicago.edu

